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INTEGRATING PERSUASIVE MESSAGING STRATEGIES INTO HIGHER EDUCATION EARLY ALERT INTERVENTIONS TO IMPROVE STUDENT ACADEMIC BEHAVIORS

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INTEGRATING PERSUASIVE MESSAGING STRATEGIES INTO HIGHER
EDUCATION EARLY ALERT INTERVENTIONS TO IMPROVE STUDENT
ACADEMIC BEHAVIORS

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Communication and Information Studies
at the University of Kentucky

By
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2021

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ABSTRACT OF DISSERTATION

INTEGRATING PERSUASIVE MESSAGING STRATEGIES INTO HIGHER EDUCATION EARLY ALERT INTERVENTIONS TO IMPROVE STUDENT ACADEMIC BEHAVIORS

Higher Education is at a critical juncture as both public and private institutions seek to attract, retain, and graduate students. Institutions of higher education have traditionally developed communication and engagement strategies that become part of early warning/alert systems intended to increase student positive academic behaviors and improve student success. Persuasion can be a powerful tool in improving communication—especially when persuasive messages are deployed within the complex and ever-changing media landscape. Communication and persuasion scholars, for example, have applied persuasive messaging interventions in a variety of contexts but have yet to substantially apply these persuasive tactics in a higher education setting. The current study seeks to overcome this deficit by applying Cialdini's (2001) persuasion principles of consensus and authority, along with Kaptein's (2009) susceptibility to persuasion construct, to determine whether higher education early alert systems can improve positive student academic behaviors. As such, the current study uses a 2 (susceptibility to persuasion) X 2 (message consensus) X 2 (message authority) factorial design to test whether the integration of persuasion principles into intervention messages improves the efficacy of an early alert intervention. A total of 622 undergraduate students were recruited in fall of 2020 from a research one university in the southeastern United States and completed an online survey. Results revealed two significant main effects: one for susceptibility to persuasion and a second for message authority. Individuals high on susceptibility to persuasion reported greater intentions to engage in positive academic behaviors. The second main effect revealed that individuals who received the high authority alert message expressed greater intentions to engage in positive academic behaviors. No significant main effect was reported for consensus messages. Likewise, no significant interaction effects were revealed for any of the three variables operating in tandem. Implications are discussed as they relate to higher education administrators who are considering new messaging strategies and tactics for improving undergraduate academic early alert systems before acknowledging limitations associated with the current study. This dissertation concludes with an exploration of future directions that involve additional persuasion principles (beyond authority and consensus) to determine how they might potentially improve persuasion attempts across contexts both inside and outside of higher education.

KEYWORDS: Communication, Technology, Higher Education, Early Alert Systems, Authority, Consensus, Persuasion Principles

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May 7, 2021

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DEDICATION

“Buy the ticket, take the ride.”

-Hunter S. Thompson

To my wife Piper and daughter Lucy, your patience and support for me throughout this journey is overwhelming. You are the reason for all my success.

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To my family, mentors, leaders, and advisors along my academic journey, without your steady guidance, motivation, and intellect, I'd not be where I am today. To my mom and stepfather, who have always been driving forces for me. I've had the distinct and wonderful pleasure to be mentored and cared for by very special people—all of whom played an important role in my life at the time when I needed it most. To my high school counselor, and my parents – who collectively didn't give up on me or my academic pursuits when I voluntarily chose to join the military immediately out of high school. Your support never wavered.

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CHAPTER 1. INTRODUCTION AND RATIONALE

Higher Education & Student Success

It has long been recognized that universities are among the most stable and change resistant social institutions to have existed in the past 500 years (Gibbons, 1998). Recurring institutional revenue for most colleges and universities are driven by recruitment and cyclical enrollment, which helps the university invest in growth-based initiatives. Although total undergraduate enrollment increased in higher education institutions by 37 percent between 2000 and 2010 (from 13.2 million to 18.1 million students), enrollment decreased by 7 percent between 2010 and 2017 (from 18.1 million to 16.8 million students) marking an intermittent decline in enrollment nationwide. Bouncing back, undergraduate enrollment is projected to increase by 3 percent (from 16.8 million to 17.2 million students) between 2017 and 2028. (U.S. Department of Education, National Center for Education Statistics, 2019). With the projected rise in enrollment in the next ten years, higher education will be in demand, with a variety of learners, backgrounds and abilities seeking a college degree, perhaps as first-generation students who are traditionally underprepared for college academics. According to a 2018 report on college readiness put forth by ACT, the national testing agency, a higher percentage of students in 2018, as compared to previous years, fell to the bottom of the preparedness scale, showing little or no readiness for college coursework. Of that, thirty-five percent of 2018 high school graduates met none of the ACT College Readiness Benchmarks, up from 31% in 2014 and from 33% last year (ACT, 2018). Further, a Fall 2021 Chronicle report stated that 21.7 percent fewer high-school graduates went straight to college compared with 2019. According to the report, across all institution types, enrollment of

students from low-income high schools fell 29.2 percent, compared with 16.9 percent for graduates of higher-income schools (Hoover, 2020). Taken together, higher education trends suggest that the achievement gap will continue to grow as students find themselves delaying their pursuit of higher education. These delays will further exacerbate the need for robust resources and interventions to assist students when they eventually decide to enroll.

With college enrollments and college readiness expected to continue to decline, especially as both are confounded by the coronavirus pandemic, pre-enrollment risk factors such as student readiness present unique challenges for colleges and universities in America as they struggle to attract, retain, and graduate students. As such, many institutions are searching for strategies to help them improve student success. These strategies include, but are not limited to, scholarship and tuition-based tactics, robust tutoring, and largely untested strategic communication interventions. The next section describes how persuasive messaging might be used to improve these important interventions.

Persuasive Messaging and Higher Education

It has already been acknowledged that higher education is a complex environment where communication with students can be especially overwhelming even if the communication is intended to improve student success (Yeager & Walton, 2011). Messages that employ persuasive principles and tactics could be used to improve the efficacy of early alert interventions. Social scientists and researchers have investigated the ways in which individuals' attitudes and actions can be influenced using persuasive principles (Cialdini, 2001). The six universal persuasion principles identified by Cialdini

are reciprocity, scarcity, authority, consistency, liking, and consensus. A detailed discussion of each persuasion principle is provided later in this document.

Many researchers have employed scales and instruments to test the efficacy of persuasive messages. A particularly promising scale was developed by Kaptein (2009) to measure susceptibility to persuasion (STPS). The scale was designed to measure how sensitive or susceptible people are to persuasive cues contained in messages. It may well be that early alert messages can be improved by using the STPS scale along with Cialdini's persuasion principles. To inform message design, it is necessary to explore the risk factors that negatively influence student success in higher education.

Higher Education Student Risk Factors

Factors that threaten persistence and graduation are multifaceted, but research provided in the 2005 Community College Survey of Student Engagement identifies several risk factors. Among them are being academically underprepared for college-level work; not entering college directly after high school; attending college part-time; being a single parent; being financially independent (i.e., students who rely on their own income or savings and whose parents are not sources of income for meeting college costs); caring for children at home; working more than 30 hours per week; and being a first-generation college student. Research clearly suggests that students who exhibit two or more of these risk factors are less likely to persist. Students with two or more of these characteristics are more likely to drop out than their peers who do not possess these risk factors (Adelman, 2006; Choy 2001; Kuh et al., 2006; Muraskin & Lee 2004; Sheeo 2005; Swail, 2003). With the exception of non-traditional students, first generation college

students appear to be especially at risk (Gibbons et al., 2019). A baseline understanding of risk factors is important before exploring higher education student success.

Higher Education Student Success

Broad definitions of student success are influenced by economic realities and workforce development needs (Kuh et al., 2006). A substantial body of research reveals that once a student begins college, a key factor regarding whether they will persist and thrive is determined in large part, by the extent to which the student takes part in positive academic behaviors and activities. Kuh et al., provide a student-centric definition of student success when they describe it as “*academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational objectives, and post college performance (p. 1)*”. Perhaps the most prominent illustration of student success is provided by Kuh in his list of High-Impact Educational Practices (HIP’s) whereby a student’s likelihood of success is increased if they participate in at least two of the HIP’s.

Considering the importance of student success to institutional survival, Kuh’s definition fails to provide specific guidance for a controlled experimental study attempting to determine the impact of persuasive message interventions because it is too vague. While student success research is comprehensive in terms of applying HIP’s across complex scenarios, student success needs to be reframed using specific micro positive academic behaviors. According to Sail (2003), a comprehensive retention program includes several institutional student service resources; being student-centered; student needs and diverse populations; cost effectiveness and the support of a

comprehensive student monitoring and alert system that will become the foundation for institutional research.

The purpose of the current dissertation is to determine the efficacy of academic alert systems that incorporate persuasive strategies to improve positive academic behavior. Early alert systems have a storied history in higher education and are described in the next section as important tools used by university administrators.

Academic Early Alert Systems in Higher Education

In a review of the higher education early alert literature, Liz-Dominguez et al., (2019) reported that predictive algorithms that are part of many early warning systems vary greatly across higher education settings. Considering the factors for student attrition, it is important that proper and informed steps are taken to support underachieving students that might exhibit those traits through their period of study and reduce the possibility of attrition (Ravikumar, 2018). They take the form of exams, and mid-term grades, and are designed to measure the success of a student within an academic setting (Karp, 2014). There are several tools that have been used in conjunction with early alert systems in higher education. Tools include, midterm progress reports, course embedded assessments, and early alert systems require a vast network of university-related individuals, including faculty, mentors, academic support units, learning centers and peer support groups (Kuh et al. 2005; Tagg 2003). Unfortunately, some of the tools are less effective because of the intervention timing. For example, middle of the term grading reports are considered ineffective because they occur too late in terms of an actionable, course-correcting intervention. In addition, they require a more real-time response to negative academic behaviors (Cuseo, 2006).

To overcome these shortcomings, many institutions have deployed early technology-enabled alert tools, which measure activity and classroom related issues well-before mid-term grades are posted. Timing of interventions is a particularly important dimension for undergraduate students. For example, student retention, progression to degree, and graduation at Historically Black Colleges and Universities (HBCUs) are fostered when at-risk students are identified early, and intervention strategies are employed (Nettles et al. 1999). Bosco (2012) posits those interventions designed to increase the frequency with which students seek help should start early in their academic career. A series of follow-up (booster) interventions should occur at several points in the semester in order to encourage and ongoing dialogue about potential challenges that might impede successful completion of a particular course or semester. For this reason, technology-enhanced early alert communication interventions are an effective way to increase graduation and retention rates among undergraduate students (Cai et al., 2015).

An important question facing higher education administrators today is how to promote successful student learning with individuals with poor college preparation skills. Early alert programs, also known as “early warning systems,” are a recognized tool in a higher education academic setting for improving student retention and engagement. Most institutions seeking to improve student success or retention have an established technology-based system to collect, track, route and communicate academic-related issues a student might encounter. While there are different labels to refer to the technology-based systems, the term, “academic early alert system” captures the essence of the systems and is defined as “formal communication systems, institutions put into

place to help with the timely identification and intervention of students who display attrition risk factors” (Hanover, 2014).

Academic early alert systems include a variety of messages related to academic, social and personal issues that students may face. A 2009 survey of higher education administrators revealed that “an effective early alert system is among the very highest priorities of those charged with improving student retention at virtually all types of colleges” (Hanover, 2014, p.3).

While there is agreement among administrators that early alert systems are important, there is little consensus about how messages should be framed and from which modality they should be delivered to at-risk students. For example, students who have been missing class due to a prolonged illness (COVID-19) may require a different message than students who are simply not attending class because of low motivation. Very little of the higher education literature can provide guidance about how the two messages might be different.

Since 2009, the research on academic early alert systems provides guidance about what shouldn't be done. For example, recent research suggests that technology alone is not sufficient. Electronic advising and alerts systems have potential but fall short because not enough attention is given to the human side of educational technology (Karp, 2014). Many colleges and universities underestimate the challenges associated with ensuring that such systems are adopted effectively by end-users (e.g., faculty and staff). That is, even the best system and the best data depend on people to translate the system and data into functional messaging systems that can positively impact student retention and persistence—or at least improve the likelihood that students will engage in positive

academic behaviors. Put simply, there are several additional contextual factors that can be useful in improving the quality, and most importantly, the efficacy of academic early-alert systems. Three factors, generic pre-packaged messages embedded within the academic early-alert systems, student college-readiness, and low student motivation are considered next.

Additional Contextual Factors

Even though Kuh et al. (2006) provide a defensible list of HIP's that have been positively linked to student success, little guidance is provided by him or the literature about how to implement academic early-alert systems. The technology is not the barrier—rather, what should the messages say? How should the messages be framed? Scholars and recent reports have argued persuasively that technology is not enough to retain a student (McKenzie, 2018). Beyond the ability of the technology to reach at-risk students at a time when it will make the most difference, there does not appear to be sufficient guidance about how to frame the messages in a way that encourages at-risk students to engage in behaviors that will make them successful.

The most advanced and expensive technology may not be successful in reaching students because the messages are simply not persuasive.

The same is true about students who are unable to be successful in higher education due to poor college-readiness. Alerts and warning messages alone are not the intervention. Students must be able to respond to the message. To state the obvious, early alert systems must include an effective persuasive message intervention strategy (The Hanover Research Council, 2007). The focus of the intervention must be on improving student behavior that moves them from being at-risk to being successful.

Finally, early alert systems are only effective if the students are motivated to act on the academic early-alert message (Lord, 2017). That is, students need to be persuaded by the intervention message to take action. Research by persuasion scholars such as Kaptein (2009) and O’Keefe (2002) provide possible strategies for improving messages to make them more persuasive. Kaptein’s research on susceptibility to persuasion cues, and O’Keefe’s research on health communication interventions can be useful in the context of higher education. Finally, Sundar (2008) research on technological affordances (while not tested in this dissertation) provides guidance for selecting the most affordance-rich modality through which to send the persuasive message. Each of these literatures are considered in turn within chapter 2. Taken together, the arguments contained in this chapter justify the problem and purpose of this dissertation as described below.

Statement of the Problem

Due to the complexity of academic early alert problems in higher education, compounded with factors that are likely to adversely affect student attrition and success, there are ample opportunities for improvement. Persuasive messages could be integrated into early alert systems to improve both student success and persistence. The purpose of this dissertation is to determine how persuasion principles (specifically susceptibility to persuasion, message consensus and message authority) embedded within the context of academic early alert systems, might influence positive academic behavioral intentions. Early alert systems have a storied history in higher education and are described in the next chapter as important tools used by university administrators.

Organization

This dissertation is organized into five chapters. Chapter one introduced existing problems and discussed the overall landscape of higher education—especially as it relates to student success. Chapter 1 also provided a rationale for why this study is important. Chapter two presents a review of the literature related to student success as well as persuasive communication, and provides a theoretical framework using persuasion that justifies the hypotheses. Chapter three provides the details about the methods that were used to collect data to test the hypotheses. Chapter four describes the results. Finally, chapter five concludes with a discussion of the implications, limitations and future directions associated with the current dissertation.

CHAPTER 2. REVIEW OF THE LITERATURE

This chapter begins with a brief review of the literature related to academic early alerts and the challenges associated with student communication in higher education before reviewing the literature associated with higher education advancements in communication technology. Next, we review general student success research related to positive academic behaviors that have been linked to student success. Finally, we review communication literature related to persuasion theory and other frameworks that are important to the purpose of the current dissertation including: Petty and Cacioppo's (1984) Elaboration Likelihood Model, Cialdini's (2008) persuasion principles, Kaptein's (2008) susceptibility to persuasion, Fogg's (2008) Captology, and Sundar's (2008) MAIN Model. Our exploration of persuasion is particularly useful in understanding how individual differences might interact with message characteristics to impact student behavior. This chapter concludes with a formal presentation of the research hypotheses and questions.

Academic Early Alerts in Higher Education

Early alert systems offer institutions systematic approaches to identify and intervene with students who exhibit at-risk behavior (Tamke, 2013). These academic early alert systems rely on an enterprise of federated referrals within a common format and process. Early alert systems take many forms, as some are focused on academic performance in class and are like midterm grades, while others are wider in their scope and monitor activities to include the use of learning management systems. Responses because of an academic alert vary from a one-on-one contact with the student, to mass

email communication, which drives them to additional campus resources and requires some form of behavior change as a part of the outreach (Fischman, 2007).

Faculty and instructors play an important role in academic early alerts. For an early alert to be successful and efficient, faculty and instructors should be involved in the process (Bentham, 2017). O'Malley (2019) found that early alerts used in general education classes can be a mechanism to support student success. O'Malley explored the efficacy of academic alert systems in higher education to determine whether faculty's use of the system has an impact on student course completion and academic persistence. Even with the impersonal nature of an online early alert system, students can feel supported in a meaningful way. O'Malley provides an example whereby a faculty member submitted a standard attendance response in the early alert system, where two students were marked as "attended," which prompted them to reciprocate by introducing themselves during faculty office hours. The academic early alert prompted the student to self-initiate a faculty interaction not common in a large lecture course. Students in courses where faculty used the academic early alert system in a large section, on average, earned a passing grade at a higher rate than students in courses that did not implement the academic early alert system (O'Malley, 2019, p. 76). Further, when exploring student retention as a result of using the early alert system, O'Malley reported that students were retained for the following fall semester in greater numbers in class sections where faculty instructors used the early alert system. Looking across the higher education landscape, there are best practices that have been instituted with respect to academic early alert systems, and these best practices are discussed in the next section.

Hanover Research (2017) conducted an extensive review of literature related to academic early alert systems in higher education and generated a report providing a broad overview of the current state of these best practices. Their report presents key findings and important issues all universities should consider when attempting to implement an academic early alert system. The Hanover Research report identifies organization, participation, and thoughtful interventions as key aspects to any successful university early alert system.

Regarding organization, early alert systems pull from a variety of stakeholders, but a university must decide who takes ultimate ownership of an early alert system. Academic early alert systems require both referrers and responders. These owners may include faculty, staff and academic support staff such as advisors and student affairs professionals. The primary function of early alert systems is to identify students who are at-risk, but they vary in their subsequent intervention routines which can range from a simple email notification to an intrusive required advising approach (The Hanover Research Council, 2017, pg. 3). Some interventions use mono-modality systems that include, but are not limited to, post-cards, phone calls and emails from the early alert system or from a representative that referred the student.

A Gardner Institute survey (Barefoot, 2012) suggests that institutions are more likely to rely on email more than any other form of communication for their intervention with at-risk students. Some critics of such strategies view email as a sterile, impersonal way to interact and engage with a student who is struggling with academic work. One especially vocal critic, Sandra Kingery (2018) was quoted in a 2018 Inside Higher Education article, "It doesn't seem to me that technology would make us any more

effective than we already are at identifying problems and notifying the appropriate people about our concerns. In fact, I would think any software system would actually reduce our personal connection with our students." (Inside Higher Education, 2018). When such criticisms are shared within an institution, the desired results associated with an early alert system will be diminished.

Cai et al. (2015) explored the use of an early alert system to promote the usage of tutoring centers. The Maverick Comprehensive Learning Analytics System (MavCLASS) was piloted with 611 freshmen to identify those that were academically at-risk for passing an introductory 098 Math class. Given the challenges that students face in large-lecture classes, and the barriers identified in the published literature in terms of engaging the student early with academic resources, Cai et al. deployed an early alert system that included components that provided ongoing, personalized feedback about the students' performance. The results of their study revealed a significant positive relationship between the frequency of academic early alert messages at-risk students received and their number of visits to the university tutoring center (Cai et al., 2015, pg. 61). The significant positive relationship between the early-alert system and visits to the tutoring center demonstrated that students who received an alert were much more likely to visit and take advantage of the resources at the university tutoring center. These results reinforce the efficacy of simple notification interventions that inform students about their assessment grades as being strongly related to student positive academic behaviors (Cai et al., 2015). While academic early alerts are frequently recommended in higher education, the recommendations do not occur in the absence of staunch criticism.

Academic early alert systems are seen as a mixed bag of strategies, where critics argue that although they are designed to catch struggling students when they can do the most good (usually before midterm), not every institution is seeing the results they expect (McKenzie, 2018). McKenzie details the personal accounts from university administrators and faculty who have varied experiences using academic early alert systems. Although every situation is different, a key takeaway from the personal accounts surrounds concerns associated with how an institution invests time, technology, and effort into retaining a student. Additionally, faculty input and buy-in are incredibly important—and unfortunately, incredibly time-intensive. Consider Samford University in Birmingham Alabama, who attempted to use the Education Advisory Board’s (EAB) academic alert solution. Administrators and faculty alike spent an inordinate amount of energy to encourage faculty, those that work part-time, to utilize the system. Finally, for most institutions that deploy an academic early alert system, some see positive impacts on retention rates, but for others the bar is set too high, and the goals are unrealistic. Where one faculty member commented regarding retention efforts, they said “There is no magic.” (McKenzie, 2018). With the clear obstacle articulated above, there are still opportunities and challenges.

Challenges for Higher Education

Despite the abundance of innovation in communication technology available to engage students, many undergraduates do not have the information communication technology competencies required to leverage sophisticated intervention models for communication (Katz & Macklin, 2007). This is demonstrated most recently in a study

by Katz and Macklin (2007) who outline the ICT skills and competencies required of students.

There are challenges for institutions seeking to engage students with information, resources, and interventions to retain and help them graduate. University administrators - and even faculty - will have to consider what information communication technology they have at their disposal, while also making the intervention easily consumed by the student given possible cognitive limitations and distractions. Many infer the best method for communication as whatever tool or process presents the best chance at reaching the student quickest and with the most effectiveness. Today, many consider this quick, efficient method to be through mobile devices and in particular email or text-messaging.

As the use of mobile phones and other mobile technology has become more prevalent, the social expectations governing such behavior has also shifted. Today, there is a societal obligation to have one's phone at the ready and a pressure to be continually connected. This is in an effort to not "feel out of the loop", which Cuminksy and Ling (2015) call, an *imminent connectedness*, which for both the sender and the receiver, creates ubiquitous reachability. There is also a lack of substantive research on the "immediate exposure" that text messaging via mobile devices provide. Considering the relative affordances available with mobile-based communication technologies, we will discuss the differences between text-messages via mobile devices and email messaging in terms of the features and affordances available in each. Before expanding into the communication delivery mechanism, a review of the MAIN model for understanding the basic technological affordances available in both email and text messaging will be

explored as a foundation for how technological affordances are considered in many facets of one's daily interactions with digital media.

Kuh (2008), has published several important studies aimed at improving student success and positive academic behaviors. Several of these studies are discussed in detailed later in this chapter. Walton (2011) for example, developed social-belonging interventions with the aim to improve academic and health outcomes for minority students. The interventions were focused on improving first year students' sense of social belonging in school and were tested over a 3-year period. Participants were either assigned to a belonging treatment group or a control condition. The intervention provided students with a narrative message and a daily survey at the end of the treatment. To assess the students' long-term sense of belonging, health and well-being, they were asked to complete an end-of-college post-survey 3 years later. Results revealed that the African American students in the treatment condition not only improved their cumulative grade point averages, (GPA) but also improved their self-reported health and well-being (Walton, 2011).

Put simply, small psychological interventions in higher education have been productive and meaningful. The psychological interventions do not teach students academic content, but rather, provide brief exercises that target students' thoughts, feelings, and beliefs. These types of interventions have had surprising positive impacts on educational achievement—whether over a short period of a few months or over a span of multiple years (Yeager & Walton, 2011). Developing strategies and interventions that improve students' attitudes and beliefs rely on successful communication if they are to improve and enhance academic behaviors that lead to student success. While higher

education has a history of studying behavioral interventions that lead to student success, there have also been advancements in communication technology that contribute to improvements in engaging students.

Advancements in Communication Technology in Higher Education

Innovations in communication technology are being leveraged across higher education institutions in the United States to recruit and retain students. Page and Gehlbach (2017) employed conversational Artificial Intelligence (AI) to engage students with content and information to overcome typical barriers to post-secondary enrollment. A similar approach was taken by Castleman and Page (2016), whereby an AI enabled text-messaging system improved student engagement and reduced the need to deploy expensive human resources (e.g., a full-time team of human counselors) to answer the specific questions and attend to the personal needs of each student. The primary concern with most of these interventions is that they lack a theoretical understanding of how persuasion principles and communication theory can be leveraged to improve their deployment. The application of persuasion in the design of messages and the appropriate use of communication technologies is largely missing from these earlier attempts to engage students in a higher education setting. Put another way, what is missing is the inclusion and recognition of persuasion methodologies and the consideration of the technological affordances for channel selection that would improve the efficacy of these interventions. As such, there are exciting and challenging opportunities for persuasion research involving communication technology in higher education.

Student Success Research & Considerations

In chapter one, we discuss multiple variables that have been shown to impede or accelerate one's success in college. Research has demonstrated that some factors are more impactful on student success than others. One especially salient factor is academic preparation for college-level work (Adelman, 2006; Kuh et al., 2006). In a broader institutional context, researchers have identified interventions that are described as High Impact Educational Practices (HIPs) that can positively impact student success (Kuh et al., 2006). Kuh's research has provided guidance for how educational institutions structure their programming, organize their staffing, and approach first year experiences for incoming college students. Kuh has argued and validated the use of academic alerts but has failed to provide specific guidance for how the messages used in the alerts should be designed to improve student success. Ultimately, there is a broad spectrum of possibilities for how early interventions and academic alerts could be designed—supported by research—that will be expanded upon later in this chapter.

Beyond those studies published by Kuh and his colleagues, there are other researchers who have focused on improving student retention and persistence. For example, Tinto's (1987) research provides specific suggestions for how to improve student retention in higher education. Tinto developed a theory of individual departure, whereby the causes of departure are at both the individual student level and the institutional, college or university levels. Tinto explains that at the individual level are student intentions (occupation and educational goals) and commitment (motivation or effort) but at the institutional level, Tinto describes adjustment (social and intellectual transition), difficulty (in meeting academic standards) incongruence (a mismatch between

the student and the school), and isolation (insufficient social interactions) as reasons why a student may choose to leave college before graduation. Both factors operate differently across students, but taken together, they provide a logical theory of departure that Tinto (1987) explicates in his book, *Leaving College: Rethinking the Causes and Cures of Student Attrition*.

To date, Tinto's book describing three decades of student success research, has been cited by over 18,000 scholars (see Kuh, 2006) and provides the primary foundation for higher education student success.

Positive Academic Behaviors

While effective classroom activities are critical, it is evident that learning is optimized when the students are also engaged in positive academic behaviors (described as HIPs) outside of the classroom. These behaviors are most associated with seeking help from academic support services and tutoring centers, (Cai, 2015; Thompson, 2007).

Positive academic student behavior, for the purposes of the current dissertation study, is conceptually defined as the act of, or intentions to, perform an action that would leverage academic support services—such as visiting a learning center. Higher education institutions that want to activate High Impact Practices, should evaluate how institutional conditions can positively impact student success.

The current dissertation, while leveraging Kuh's (2008) framework for student success, is primarily concerned with how academic early alert systems can be improved using communication theory to impact positive academic behaviors. Specifically, because of the global pandemic, we will be measuring positive academic behavioral intentions

instead of actual behavior. Next, we turn our attention to the communication theories and other frameworks that are applied in the current dissertation study.

Communication Theories and other Frameworks

The theories and explanation available to communication professionals and researchers are vast. In addition, the circumstances associated with technology as it collides with more practical applications, have resulted in conditions that require some of the theoretical frameworks to be revised. Message recipients (e.g., students) have high expectations for personalized messages beyond the inclusion of their first name. These expectations make it no longer sufficient to simply personalize the salutation in a message. A more nuanced dimension of personalization is expected, which changes the nature of the communication theories and other frameworks. For example, message design, message positioning, and message persuasive principles can alter message processing—both positively and negatively. Technology, persuasion, message design and the channel through which the message is sent and received, all increase the complexity of the communication theories needed to explain how institutions can students be more successful in higher education.

O’Keefe (2016) describes persuasion as, “a successful intentional effort at influencing another’s mental state through communication in a circumstance in which the persuadee has some measure of freedom” (p. 3) The research within persuasion theory is extensive, and well recorded. Several persuasion theories have been advanced over the past sixty years that are relevant to the current dissertation study including: Petty and Cacioppo’s (1984) Elaboration Likelihood Model, Cialdini’s (2008) persuasion

principles, Kaptein's (2008) susceptibility to persuasion, Fogg's (2008) Captology, and Sundar's (2008) MAIN Model. Each are described in greater detail later in the chapter.

To better understand the higher education landscape, we must look to the current, modern, landscape for digital communication.

Modern Landscape for Digital Mediated Communication

The modern world affords humans the ability to communicate across a variety channels and modalities. Currently, email is the predominant digital (non-invasive) way the modern world communicates complex and simple two-way messages. The total number of worldwide email accounts is expected to increase from nearly 3.9 billion accounts in 2013 to over 4.9 billion accounts by the end of 2017 (The Radicati Group, 2013). The number of mobile subscribers, accounts for almost two-thirds of the world's population, reaching almost 5 Billion subscribers (GMSA, 2017). Further, it is estimated that over 6 billion text messages are sent each day in the United States (US), over 180 billion are sent each month, and 2.27 trillion are sent each year (CTIA, 2016). According to Global Marketing Watch (2016), Text messages have a 98% open rate, while email, on average, only has a 20% open rate. Text messaging has seen staggering growth in adoption and usage across the globe in terms of its effectiveness and relative open rates. Consequently, people are becoming overwhelmed with the amount of clutter, noise and junk sent to them via a myriad of technological channels from individuals, businesses, solicitors, and marketers. Some ethical entrepreneurs warn that companies are purposefully creating persuasive technology to hijack consumers' minds and coerce behavior change through various methods. It's particularly burdensome in today's fast-

paced communication landscape to fight for the user's attention let alone accomplish some form of behavior change.

Harris, (2016) a former design ethicist at Google and now co-founder of Center for Humane Technology, a 501c3 whose mission is to drive a comprehensive shift toward humane technology that supports our well-being, democracy, and shared information environment. Harris states that engineers and software designers develop interfaces, experiences to be persuasive by nature. This is most accomplished by what is referred to as "technological persuasion", where things like a pop-up notification, color, design, load time, and latency are all designed to persuade the user into spending additional time on the platform, especially as it relates to social media. These designed interfaces give users choices, but in many cases, the choices are not in the user's best interest, but rather the platforms. These are all examples of system-structured affordances designed in many ways, to keep users on a particular platform and in-turn increase screen time.

Increased screen time is particularly worrisome for younger generations, who are targeted by advertising, marketing and attempts at their attention. As mobile phone adoption increases, and communication methods adapt to mobile-based delivery, the ways in which Generation Z communicate will continue to shift (Strauss, W. & N. Howe, 1991). They are accustomed to high-tech information sources with messages bombarding them from multiple media and have never lived without the Internet (Williams & Page, 2011). Generation-Z also enjoys speed. Fast, customized, and *personalized* content (Fromm and Read, 2018). Personalization has been viewed in the past as a value-added feature, and today many are expecting personalization as a part of their digital

experience. Digital media is often the most efficient approach to quickly engage members of the Generation Z, particularly on a college campus setting, to change behavior.

At first, in a review of the literature, the MAIN Model (Sundar, 2008) was an exceptional explanation for how internet-enabled activities impacted human behavior. However, through the discovery of two unpublished studies, it was most evident that the MAIN model only explained the bits and particles associated with the tool, platform or medium itself, and explained little about the impacts made on the human-to-computer interaction (HCI) and if any behavior change was explained by each affordance. Cues and heuristics were excellent in explaining *how* the technology afforded opportunities and contributed towards user's behavior, but not necessarily *why* behind the behavior change. Now that we have explored the rich, digital media landscape, we'll look at the communication environment in higher education.

Student Communication in Higher Education

Higher education is a complex communication environment. The undergraduate experience is an area where considerable focus has been given into the efficacy of communication, marketing and in particular student interventions for student success (Yeager & Walton, 2011). For this discussion, the focus is on evaluating student engagement tactics as it relates to communication technology, as well as modern communication technology tools that aid in the pursuit of student success. Example studies and interventions are drawn upon as reference to help support where there may be opportunity for improvement for what is currently taking place in higher education settings (Seeman & O'Hara, 2006; Katz & Macklin, 2007; Cuminksy & Ling, 2015). This discussion will solely focus on how communication technology engages new, incoming,

or currently enrolled undergraduate students, particularly as it relates to a research one (R1) institution. Concepts of recruitment, financial literacy, academic engagement, and retention are explored. To consider the communication technologies in higher education, is to also draw a connection to the modern landscape for digital mediated communication which was discussed earlier.

Communication technology can be employed, or rather deployed, across variety of channels and contexts. Today, email is the predominant digital (non-invasive) tool for mass communication technology in the modern world. Further, according to a recent report produced by the Ruffalo Noel Levitz, (E-Expectations) (2017) email is the third most influential way to communicate with students and nearly all students use email at least once a week. Also, the report found that more than three-quarters of students are open to some form of text communication with colleges and universities. Further, 81 percent of the students who completed the survey indicated they would welcome text messages from a school of interest on their mobile device. Additionally, students indicated they were comfortable receiving messages on apps such as Snapchat or Facebook Messenger, which is a shift in the attitudes of students in prior studies. Therefore, use of communication technology, or ones considered to be the most relevant and effective may be the best approach to engage members of Generation Z, particularly on a college campus setting to change or affect behavior and attitudes.

With an increase in the number of messages students are subject to, from both individuals, businesses and university administrators, source and platform credibility are a complex variable to measure in even more complex communication-driven environment such as higher education. This is most often achieved, at scale, with the use

of constituency relationship systems (CRM). The benefits of CRMs in a college setting include a student-centric focus, improved customer data and process management, increased student loyalty, engagement, retention and satisfaction with the college's programs and services (Seeman & O'Hara, 2006).

Innovations in intervention methodologies are taking place across higher education institutions in the United States, particularly as a measure to stave off dips in new student enrollment. Page and Gehlbach (2017) employed conversational Artificial Intelligence (AI) to engage students with content and information that typically acts as a barrier for enrollment into post-secondary education. Like the approach by Castleman and Page (2016), AI enabled text-messaging and engagement reduces the need to deploy resources of a human counselor to address the specific questions and personal needs of each student (Page & Gehlbach, 2017). However, these strategies and studies lack the employment of persuasion and best practices in the theoretical constructs of persuasion. Meaning, what is evident is use of communication technology methodologies to engage students in a higher education setting, but what is missing is the inclusion and recognition of persuasion methodologies and the consideration of the technological affordances for channel selection. This presents exciting and challenging opportunities for communication researchers and professionals in higher education. Persuasive communication and messaging will be discussed in detail in the next section.

Persuasive Communication and Messaging

Persuasive communication is present across a variety of disciplines, such as health communication, politics, marketing, law and many more. The concepts of persuasion are closely linked to behavior change and attitudes. As an introduction into the topic of

persuasion, a definition of persuasion should be deliberated. O’Keefe (2016) attempts to frame five common features of persuasion. First, when one says that a person has persuaded another, we typically identify a *successful* attempt to influence. Second, in typical persuasion cases, the persuader *intends* to influence the recipient. In a third example, there is some level of *freedom* on the recipient's part. Fourth, persuasion cases are ones in which effects are made through *communication* and, as O'Keefe suggests, almost exclusively through the medium of language.

To reconcile these exemplary paradigm cases into a definition of *persuasion*, O’Keefe (2016) proposes the following definition: *a successful intentional effort at influencing another’s mental state through communication in a circumstance in which the recipient has some measure of freedom.*

There are several theories and conceptual models where scholars attempt to explain how persuasion plays a role in the effects or attempts on behavior. Particularly, cognitive dissonance theory (Festinger, 1957), social judgement theory (Sherif & Hovland, 1961), theory of reasoned action (Fishbein, 1979) and heuristic-systematic model (HSM) (Chen & Chaiken, 1999) are all particularly situated for consideration. Later in this chapter, the Elaboration Likelihood Model (ELM) is discussed, whereby a dual process model is explained further in persuasion. A primary function to this dissertation is an examination of Cialdini’s (2007) six universal persuasion principles, which are later defined and expanded upon by persuasion and psychological theories. A demonstration is presented of how the persuasion principles are explained by seminal research and studies across the discipline.

Persuasion Principles

Cialdini (2009) authored the commercially popular book titled, *Influence: The Psychology of Persuasion*, which is listed as a *U.S. National Bestseller* and is widely considered a popular reference book for marketers, salespeople and those curious about persuasion. In the book, Cialdini outlines six universal persuasion principles and how to use them to become a skilled persuader. Although the book is highly written towards a profitmaking audience, the universal principles themselves are thoughtfully positioned as it relates to the tenants of persuasion and behavior change. In the next section, a detailed overview will be provided on the universal persuasion principles.

Universal Persuasion Principles

The six universal persuasion principles are: reciprocity, scarcity, authority, consistency, liking, and consensus. Cialdini (2009) posits that of the thousands of different tactics that compliance practitioners employ to produce a result, the majority fall within these six basic categories, or principles (Cialdini, 2007). Those principles are governed by a fundamental psychological origin that directs human behavior. Cialdini also suggests the principles as universal rules, in which we humans behave. What isn't clear and has yet to be explored, is the underlying, or most relevant theory for each of the six Cialdini principles and how academic theory might explain the principles more thoroughly. The following outlines the principal definition, rationale, underlying theory, and relevant research as it relates to Cialdini's six principles of reciprocity, scarcity, authority, consistency, liking, and consensus.

Reciprocity

Following a good deed, or receipt of a kind gesture, it's natural to feel a sense of appreciation from the good doer. In many cases, one feels a sense of burden to reciprocate that behavior back to that individual, or to act in mutual exchange. This is defined as the first persuasion principle, *reciprocity*. That is, we are obliged to give back to others in the form of a behavior, gift, or service that they have received first. Cialdini (2009) describes this rule as saying we should try to repay, in kind, what another person has provided us.

The social cognitive theory by Bandura (2001) helps to explain the reciprocity principle. We are, by nature, a society of reciprocation. No culture in the world does *not* reciprocate (Cialdini, 2007). Due to the role that mass media play in our world, understanding the mechanics to which communication influences human thought, affect and action is where social cognitive theory provides a conceptual framework to examine these issues. Human behavior is often explained through a unidirectional model, but instead is considered a triadic reciprocal causation (Bandura, 2001, p. 266). Overall, social cognitive theory states when someone observes a model performing a behavior, they remember the sequence of events and use that information to guide subsequent actions or behaviors. This is seen in a study by Cheung and Chan (2000) exploring the social-cognitive factors of donating money to charities. They explore the idea of human exchange explained through reciprocal altruism (Cheung & Chen, 2000, p 62). While social cognitive theory might explain the modeling of behavior, it does not necessarily explain the reciprocal nature of human behavior. For this, social norms (Sherif, 1936)

help to further explain the reciprocity principle, whereby humans feel compelled, both intrinsically and culturally to reciprocate good deeds and gestures made by others.

Scarcity

The thought of potential loss plays a crucial role in human decision making. Consider the sales tactics many marketers use in today's advertising. People are often more motivated at the thought of losing something, as opposed to the thought of gaining something (Cialdini, 2007, p. 238). Tactics such as "While Supplies Last" or "Limited Seating" are example messaging tactics to invoke the *scarcity* principle. With that, Cialdini claims people want more of those things they can have less of (Cialdini, 2008). This is demonstrated through examples like health benefits, restrictions, limited number, and information, last minute chances and reservations.

Theoretically, this could be best explained by way of the *reactance theory* by Brehm (1989). The reactance theory states that people become motivationally aroused by a threat to or elimination of behavioral freedom. Brehm proposes the psychological reactance theory on the basic notion that people are motivated to restore specific behavioral freedoms, whereby those freedoms are threatened or taken away from them. These freedoms can be real or perceived, but for the purposes and example set forth by Cialdini (20017), they are used to influence behavior via marketing or communication tactics.

Authority

A highly credible or known source can greatly affect the issue-relevant attention one gives to a particular message. Cialdini (2009) positions the authority principle as an idea that people follow the lead of credible, knowledgeable experts. This is true for how

scholars gravitate towards for relevant, credible information from trusted, peer-reviewed sources. Authority principle examples include the use of figures, spokespersons, sponsors, titles and even material symbols such as clothing. This is further demonstrated by the Milgram Study, which focused on obedience to authority carried out by Stanley Milgram, a psychologist at Yale University. Milgram conducted an experiment focused on the conflict between obedience to authority and personal conscience (Milgram, 1974).

Petty & Cacioppo (1983) examined source credibility and how for issue-relevant information from a highly credible source can alter *persuadability* by increasing the subjects' message relevant thinking. For example, a speaker who is of high credibility is more persuasive than a speaker of low credibility. Their study looked at independent variables for source credibility and message quality and dependent measures of attitude and cognitive responses. The results of the study indicated that those who are typically in low differentiation of stimuli, showed differential persuasion to strong and weak arguments only when they were presented by a highly credible source (Petty and Cacioppo, 1983). Source credibility is an important factor for persuasion effects. Obedience to authority can be demonstrated in a variety of contexts, particularly as it relates to organizational models, most evident in a traditional leadership structure in today's workplace environment. Often, obedience takes place when messages are delivered from a person in a leadership position or with an authoritative role and title.

Consistency

Humans aim to be consistent. Once we have made a choice or have taken a stand, we will encounter personal and interpersonal pressures to behave consistently with that commitment (Cialdini, 2007). This is evident in our media consumption habits (e.g.,

Netflix and binge watching) whereby finishing one more episode to feel complete, or whole, or rather *consistent*. This also appears in human interpersonal interaction by way of people being consistent with the things they have previously said or done. One would not claim to be cutting sugar out of their diet and then proceed to consume candy bars. If it were the case, there would be a level of personal cognitive dissonance (slipping on one's diet plan). People do not like to be mentally uncomfortable, human beings strive for internal psychological consistency in order to mentally function.

The consistency principle can be most expanded upon through the cognitive dissonance theory, (Festinger, 1962) which suggests that we have an inner drive to hold our attitudes and behavior in harmony and avoid disharmony (or dissonance). According to the theory, cognitive dissonance can be avoided in one of three ways. First, when one of the dissonant elements is a behavior, the individual can change or eliminate the behavior. Second is by acquiring new relevant information that outweighs the dissonant belief. Third is to reduce the importance of the cognition. Consistency can play into several persuasive scenarios that leverage and counteract the cognitive dissonance principles.

Liking

We prefer to say yes to people we like. The liking principle is most notably illustrated by Cialdini (2009) by way of the Tupperware party. Tupperware parties call upon salespeople to employ a friend or a group of friends to host a party unto which they invite their friends to learn more about the product. The compliance setting in a Tupperware party, calls upon the liking principle in that the request to purchase the product comes from the friend and not the salesperson.

The liking principle can be explained by several persuasion theories, though not one single theory seems to neatly explain the liking principle. The interdependence theory (Johnson & Johnson, 2005), balance theory (Heider, 1988) and the similarity/attraction theory (Berscheid & Hatfield, 1969) might all contribute towards a combined explanation of the liking principle as described by Cialdini. Of those, the interdependence theory aligns closest with the principle definition of liking. That is, closeness is the key to all relationships; and all relationships come with a reward and a cost. The theory is concerned with the way goals are structured and how that determines how individuals interact, which in turn, creates outcomes (Johnson and Johnson, 2005).

Consensus (Social Proof)

Consensus, or social proof is the principle that explains how we look to the actions and behaviors of others to determine our own. Social proof, as it is described in chapter four of Cialdini's (2007) book, is now commonly referred to as *consensus*. For consistency in this discussion, we will refer to it as *consensus*. Cialdini views the consensus principle as a socially driven construct that is used to determine what is correct, is to find out what other people think is correct too, through social comparison. Examples of this are the use of canned, or recorded laughter in television sitcoms. Our reliance on the propensity that others are correct based on their actions, is illustrated in the laugh track example, whereby we feel an urge to laugh if we hear others doing the same. Likewise, many bartenders start their tip jars with a few dollars at the start of an evening to simulate tips left by previous customers (Cialdini, 2007 p 117).

The consensus principle can be most explained by the Theory of Reasoned Action (TRA) (Fishbein, 1979) which aims to explain the relationship between the attitudes and

behaviors within human action. Behavioral intentions are particularly important as they those intentions are determined by one's attitudes to behaviors and subjective norms. Though, this will be discussed in more detail in the methods section in chapter 3, the TRA and Theory of Planned Behavior (TPB) measures can use either a 5- or 7-point scales, where a person's beliefs about the likelihood of performing the behavior will result in outcomes measured in a bipolar "unlikely-likely" or "disagree-agree" scales.

Montaño and Kasprzk's (2015) integrated behavior model (IBM) includes constructs of TRA/TPB, as well as other contributing theories. The most important determinant of one's behavior in the IBM is intention to perform the behavior. That is, the behavior is most likely to occur if (1) the person has a strong intention to perform the behavior and the knowledge and skill to do so (2) there is no serious environmental constraints to do so, (3) the behavior is salient, and (4) the person has performed the behavior previously. These components and their interactions are important to consider when measuring one's behavioral intention for this current dissertation.

Behavioral intentions are a critical component to the theory of reasoned action. Behavioral interactions are a function of both attitudes and subjective norms towards a behavior. For this dissertation behavior change will be measured by behavioral intentions, defined as positive academic behavioral intentions.

Normative beliefs consist of whether significant relevant groups approve of the action. Typically, the more likely a group will approve of an action, the more likely the individual is to perform the action. When people are unsure how to act in certain situations, they tend to look to others to see how they would respond. This notion plays

into the phrase, “There’s safety in numbers”. Additionally, peer pressure is another example of the consensus principle and TRA.

This has been an overview of the definitions and the relative theoretical rationale, or explanation as it relates to the six persuasion principles set forth by Cialdini (2009). This evaluation considered the specific persuasion theories that might best help support the six principles from a theoretical perspective. In the next section, an overview of the Elaboration Likelihood Model is provided, as well as a discussion on how heuristic cues contribute toward persuasion effects.

The Elaboration Likelihood Model

Elaboration Likelihood Model (ELM) is a dual process model that aims to provide a general framework for organizing, categorizing, and understanding the basic process underlying the effectiveness of persuasive communication (Petty & Cacioppo, 1986, p 125). In a persuasion context, Petty and Cacioppo define *elaboration* as the extent to which a person thinks about the issue-relevant arguments contained in a message. Elaboration can be generally regarded as being either high or low. Though, elaboration can also be viewed as living on a continuum. That is, a message impact can vary based on the individual having no thought, some thought, to having complete elaboration of every argument within the message. The *likelihood* in which elaboration takes place is determined by the individual’s motivation and ability to evaluate said communication (Petty & Cacioppo, 1986). The ELM presents a comprehensive approach that explains the persuasion process as taking place through two distinct routes: either a central route or a peripheral route.

The Central & Peripheral Routes to Persuasion

ELM suggests there are two different cognitive processing routes to persuasion: the central route, and the peripheral route (O'Keefe, 2016). The central route to persuasion represents the process involved when elaboration is relatively high. When persuasion takes place through the central route it typically occurs when the receiver has a high level of issue-relevant information and scrutinizes the arguments contained in the message. For example, a television message about an automobile advertisement may be processed through the *central* route when a viewer pays close attention to the facts, figures, and features of the car. In this case, the viewer's elaboration is relatively high, which allows them to participate in issue-relevant information about the car and its specific features. Conversely, processing using the peripheral route would occur when elaboration is relatively low (O'Keefe, 2017). Persuasion achieved through *the peripheral* route typically happens when the recipient has some type of shortcut or simple heuristic rule that they reference to evaluate the advocated position or argument. The receiver might rely on a variety of peripheral cues, such as the credibility of the communicator or the appeal of an advertisement or spokesperson. In the case of the television advertisement about the automobile, the viewer with low elaboration, might pay closer attention to the attractiveness of the spokesperson and process the message via the peripheral route. Beyond the peripheral and central routes to persuasion, there are other factors that have been argued to be salient. These include motivation and the receiver's ability to engage in elaboration.

Personal Relevance and Need for Cognition as Salient Individual Differences

Recipients of a message may encounter other factors that affect elaboration, among these factors are motivation and overall ability to engage. Specifically, the two individual difference factors that have been shown to influence one's motivation for elaboration are *personal relevance* and *need for cognition*. If an issue is more personally relevant to a receiver, the receiver's motivation to engage thoughtfully, heightens. Several studies have reported findings consistent with these knowledge claims (Petty & Cacioppo, 1979, 1981; Petty, Cacioppo, & Goldman, 1981; Petty, Cacioppo, & Shumann, 1983). Need for cognition is another factor influencing elaboration motivation. Need for cognition refers to the tendency for an individual to engage in and enjoy thinking (Cacioppo and Petty, 1982). This varies among people, as some enjoy the engagement in committing effortful cognition, where others do not. Beyond a receiver's motivation for elaboration is their actual ability to engage in issue-relevant thinking.

The presence of distraction in a persuasion setting (as well as prior knowledge of a topic) can limit the receiver's ability to engage in issue-relevant thinking. Distraction consists of confusing task or stimuli that accompanies a persuasive message. Prior knowledge is associated with prior knowledge about the persuasive topic. The more extensive the receiver's prior knowledge is on the persuasive topic, the greater their ability to engage in issue-relevant thinking (O'Keefe, 2016). A review of the literature associated with how the ELM helps to frame Cialdini's (2008) persuasion principles is presented next.

Elaboration Likelihood Model and Persuasion Principles

How are Cialdini's (2009) six persuasion principles explained by ELM?

Considering the earlier explanation of the six principles, using the ELM, the persuasion principles appear to function as peripheral-based cues. Though, according to O'Keefe (2016), the central and peripheral routes to persuasion are not two exhaustive and exclusive categories of persuasion. Instead, they represent two extremes on the high-to-low side of the elaboration continuum. The ELM recognizes that in moderate levels of elaboration, there might be a combination of both central and peripheral route processing. The nature of elaboration considers how one engages in issue-relevant thinking or information. For example, Petty Cacioppo, and Goldman (1981) studied how message argument strength effected persuasion. They reported that high-topic-relevance receivers were significantly more affected by the quality of arguments contained in the message but were not affected by the heuristic cue associated with the speaker's expertise. Conversely, low-topic-relevance receivers were more affected by expertise cues than by variations in argument quality. Elaboration of a relevant message plays a considerable role in how important peripheral cues are in the persuasion process (O'Keefe, 2016, pg. 151).

This review of ELM research is important only in the context of understanding how Cialdini's principles of persuasion might change as a function of individual differences. When operationalizing the six persuasion principles for an experimental study, they should be reserved for instances where there is moderate to low elaboration. That is, instances where there is low-moderate topic-relevance receivers that will engage or be influenced by the peripheral cues such as reciprocation, consistency, consensus,

liking, authority, scarcity. Cues with elements of the six persuasion principles appear to be foundational for understanding persuasion related to recipients who are in low to moderate elaboration stages of thinking—such as at-risk students who are receiving academic early alerts.

The six principles put forth by Cialdini (2009) can be explained using social judgement theory, cognitive dissonance theory, and several others—but all of these theoretical explanations assume that the recipient is in a relatively low involved state of elaboration and that cognitive involvement and motivation is also low. Research is necessary to evaluate how the six principles function as peripheral cues to influence behavior promoted in persuasive messages. To be more specific, research related to persuasive messages used in academic early alert systems is necessary to explain how the persuasion principles interact with at-risk students' individual differences (e.g., susceptibility to persuasion) to encourage positive academic behavioral intentions. Such research would be instrumental in helping to explain how and why some principles are more beneficial in academic early alert systems. For example, the liking principle may be difficult to test in text message systems but might be especially useful when academic interventions occur through interpersonal, face-to-face interactions with advisors or counselors. Additionally, the reciprocity principle may present translations challenges in a text-based communication environment because the principle requires that individuals repay, in kind, what another person has provided. As such, neither the persuasion principle of liking nor reciprocity will be considered for the current dissertation study because it relies on text-based academic early alerts.

Fogg (2003) in his work on *Captology* illustrated that all technology can be persuasive. Fogg offers a unique conceptual definition of persuasion within the context of technology as: “a noncoercive attempt to change attitudes or behaviors” (p. 134). Fogg posits that interactive technology affords elements of influence. His definition is analogous to the technological affordances described by Sundar’s (2008) MAIN model. Whereby each technology offers an affordance, which could engage the user to act (or not). The primary difference between the functions of an affordance and an opportunity for influence are small, but in some situations, an affordance can offer the user a set of choices upon which a decision is made. The concept of choices is also relevant in the work by Thaler and Susteine (2008) on “choice architecture”, which is commonly known as the design of how individual choices can be presented. The design of the choices can ultimately impact, or even influence, the decision-making process. These concepts of persuasive technology and choice architecture are important foundational concepts within the literature to better understand the complex communication landscape in higher education and the opportunities and challenges for administrators seeking to make an impact on student success.

Individual differences are psychological traits or chronic tendencies that convey a sense of consistency, internal causality, and personal distinctiveness. Individual differences are considered to play an elemental role in how people generally react across the situations (Thompson, 2018). An especially important individual difference in the context of Cialdini’s (2008) persuasion principles is susceptibility to persuasion.

Susceptibility to Persuasion

Nearly a decade following the work of Fogg (2002) Kaptein (2009) explored the use of persuasive technologies and developed a tool missing from the literature. The tool, or psychometrics scale called the Susceptibility to Persuasion Scale (STPS), focused on the idea that people differ in their susceptibility to persuasion attempts. The STPS uses Cialdini's (2008) persuasion principles as the foundational elements to measure one's susceptibility to each of the six persuasion items. Likewise, Busch (2013) developed a psychometric inventory measuring *persuadability*. Both studies aimed at using the scales and attributable results to develop indexes in an attempt determining one's susceptibility to persuasion. Additionally, Kaptein et al., (2012) utilized adaptive persuasive messages to reduce snacking and promote healthy behavior. In this research, messages that were personalized to the individual based on their susceptibility to persuasion scores lead to a decrease in snacking consumption than messages that were not personalized to the individual. This current dissertation study will employ the use of an adapted susceptibility to persuasion index based on Kaptein's foundational article and psychometric scale. Next, we briefly discuss Sundar's (2008) MAIN model for technological affordances and how it is relevant to this current dissertation study.

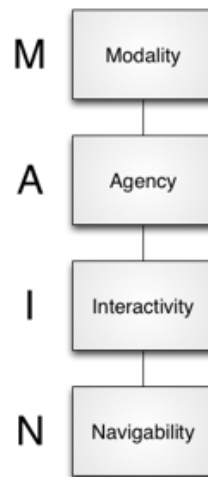
MAIN Model and Affordances

The MAIN model, for the purposes of this current study, helps to articulate the use of and the rationale for email channel modality, which is described in detail in Chapter three. The MAIN model is not tested as a theoretical framework, nor does it serve as a variable measured in the dissertation study. MAIN, or modality, agency, interactivity, and navigability, is the acronym that describes the affordances described in the heuristic model

(see Figure 1). Sundar (2008) takes a heuristic approach to understand the cues and affordances in digital media technologies. The MAIN model is designed to aid researchers, agencies and users to better design and position, devices, websites and experiences to meet the affordances of digital media users.

Figure 1

MAIN Model for Technological Affordances (Sundar, 2018)



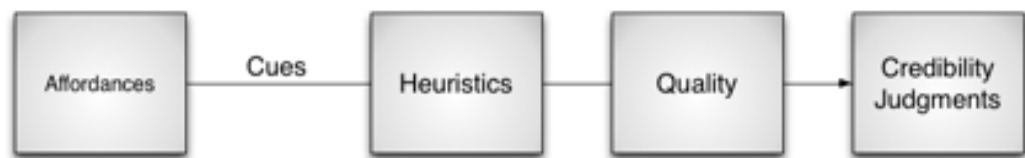
Source credibility is a critical factor in computer-mediated communication that has been challenging for researchers to measure. The source, message and medium can serve as nominal cues. However, equally important as the persuasive message, is the channel and affordances in which the message is delivered. For the current dissertation, channel, or modality selection, is the primary rationale for exploring and presenting the MAIN Model for technological affordances. The MAIN Model discusses technological affordances that can allow for the heuristic processing of cues in an online setting so that receivers can make an informed judgment about the credibility of either the source or the medium (Sundar, 2008). The MAIN Model identifies technological affordances which can trigger cues that ultimately lead to perceptions of quality and judgments of credibility (see Figure 2). An affordance (e.g., the interactivity of a website) conveys a certain cue

(invites users to live chat) that triggers a heuristic (service) leading to the conclusion that good service means good quality information, and a judgement of high credibility.

The theoretical approach for the chosen modality in the current dissertation (email) considers the MAIN Model as the prototypical method for channel selection that offers the optimal technological affordances. A deeper inspection of the affordances available in email using the MAIN model is discussed in the next section.

Figure 2

Main Model Process



Email Features and Technological Affordances

Comparing media and the technological affordances in mediums like email are not typical practices in which marketers, communication and university officials engage when considering how to communicate with their constituents. There is no industry rubric for measuring the features (a.k.a. bells and whistles) for each of the possible medium choices. Instead, many professionals consider cost, access, relevance, and reachability when determining how to communicate with a particular audience. Taken together, the most cost efficient, feature-rich communication medium available today is email. In most circumstances, email is a free per-use tool and has the ability reach numerous individuals with the click of a mouse. Using specialized technologies, email can allow for mass personalization. The email technological landscape shifts every day, bringing new email clients and enhanced functionality. Email has not really evolved much since its debut on October 1969 when the first message was sent from computer to

computer on ARPANET (Crocker, 1982). Today there are hundreds of email service providers (ESP's) (e.g., Constant Contact, MailChimp, Salesforce) and email clients (Gmail, Yahoo!, Outlook) each with their own individual feature sets and affordances that present opportunities for both the sender and receiver. Unfortunately, there is also a relative lack of confidence people have email in their inboxes—regardless of the email clients or ISPs. Email inboxes are frequently overridden with targeted sales attempts, otherwise known as *spam*. People are bombarded with so much information there is a tendency to skim and read and adopt a surface level approach in terms of consumption and reactions to email requests (Canole & Dyke, 2004). For these reasons, there is an inherent mistrust of email in spite of intentional efforts by email client creators to screen email content in an attempt to reduce spam, junk mail and other uninvited marketing attempts.

According to a recent report published by Constant Contact, a leader in the email service provider (ESP) space, in the higher education space, email read rates, open rates, and unsubscribe rates are trending slightly above all industry averages. Table 1 presents the email behaviors and metrics comparing all industries to higher education and are based on data gathered from over 200 million emails sent from ESP customers who have recorded their business type (Constant Contact, 2018). According to the summary data, higher education seems to be insulated from some of the downward trends in email engagement overall and presents unique opportunities for improving stakeholder perceptions about the quality of email. Unfortunately, many higher education institutions are beginning to decentralize their email services by using third-party marketing and

email service providers, so Table 1 may not accurately represent email activity in all educational institutions who are associated with higher education.

Table 1

Industry Averages for Email Performance

Business Type	Open Rate	Click-Through Rate	Bounce Rate	Unsubscribe Rate
All Industries Averages	18.6%	7.77%	9.60%	0.02%
Education - Higher Education	21.51%	8.12%	9.04%	0.01%

In terms of the features and affordances email provides, the MAIN model helps distinguish the key features available to both senders and recipients. Modality, Agency, Interactivity and Navigability all offer a conceptual lens for understanding how email is evaluated for affordances offered to the individual. Email affords users a host of technological affordances to send and receive messages, both with interactive and non-interactive content. The predominant features available to users of email clients are similar to those associated with text-messaging, at least in terms of the interactivity and navigability, but may differ in the immediacy and contingency factors described by Sundar, Kalyanaraman and Brown (2003).

The popularity of email marketing resulted in an overwhelming amount of spam, and along with the added junk, a reduction in the likelihood that any given email will be interpreted as a legitimate. Unfortunately, the lower legitimacy associated with email also reduced the likelihood that the email would actually be opened, read, and acted upon. Open rates and click through rates (CTR's) are all common forms of email

engagement data and a measure of a user's physical engagement with communication technology. Based on the interactivity offered by modern interfaces and platforms, users can perform several actions, such as clicking, scrolling, swiping, flipping, sliding, or zooming in/out an object, with a variety of input modalities and interaction techniques. Such physical interactions influence a variety of outcomes such as users' attitudes and behavioral intentions (Brown, 2014; Sundar, Xu, Bellur, Oh, & Jia, 2011). Put simply, an important facet of user engagement as a behavioral experience, will include the many tangible ways in which users interact with an interface—even if the interface is a simple email (Oh, J., et al., 2018).

It is evident from this review of the MAIN Model and the related channel selection, that email modality is a vast ecosystem that provides opportunities for users—in the case of the current dissertation, students. At present, and at the center of this dissertation study, are the opportunities for exploring how these email modality-based strategies are deployed for academic early alerts in higher education.

Taken together, the literature reviewed in this chapter provide support and justification for the research hypotheses and questions presented below.

Research Hypotheses and Questions

The final section of this chapter provides the research hypotheses and questions that serve to guide the experimental design and related data collection procedures which are detailed in Chapter 3. The purpose of this dissertation is to determine how persuasion principles (specifically susceptibility to persuasion, message consensus and message authority) embedded within the context of academic early alert systems, might influence positive academic behavioral intentions. As such, three hypotheses are presented below—

each aimed at testing the main effects of susceptibility to persuasion, consensus, and authority. The first hypothesis predicts a main effect for susceptibility to persuasion.

H₁: There will be a main effect for susceptibility to persuasion, such that high susceptibility participants will report greater positive academic behavioral intentions than low susceptibility participants.

Exploring the notion that social proof is an incredible driver in modern society, as well as a community driven university campus, consensus is an important variable and becomes the focus of hypothesis two.

H₂: There will be a main effect for consensus, such that high consensus message will result in greater positive academic behavioral intentions than low consensus messages.

If the presence of one persuasion principle shows an effect on behavior intentions, there are opportunities to consider how more than one persuasion principle within the message design can influence one's behavior. Therefore, hypothesis three predicts the impact of authority on positive academic behaviors.

H₃: There will be a main effect for authority, such that high authority messages will result in greater positive academic behavioral intentions than low authority messages.

In addition to testing for the main effects of each of the three independent variables (susceptibility to persuasion, message authority and message consensus), the design also allows for determining whether any of the persuasion principles were potentially additive. For example, the effects of message authority might be stronger, when susceptibility to persuasion is also high for participants. Likewise, the effects of

message consensus, might also be more pronounced for those participants that are high on susceptibility to persuasion. Do the additive effects of message consensus and message authority as persuasion principles interact with susceptibility to persuasion to influence positive academic behavioral intentions? Therefore, the following research questions are proposed to determine additive effects of the persuasion principles.

RQ₁: Will the effects of message consensus be more pronounced for participants that are high on susceptibility to persuasion?

RQ₂: Will the effects of message authority be more pronounced for participants that are high on susceptibility to persuasion?

RQ₃: Will the effects of message consensus be more pronounced for participants that are high on message authority?

RQ₄: Will the effects of message consensus and message authority be more pronounced for participants that are high on susceptibility to persuasion?

CHAPTER 3. METHODS

To test the hypotheses and answer the research questions, a 2 (susceptibility to persuasion) X 2 (message consensus) X 2 (message authority) factorial design was implemented. This chapter describes: (a) the experimental design (and related a priori power analysis), (b) sample, including recruitment (c) data cleaning (d) participants, (e) measures, (f) message manipulation strategies and related manipulation checks, and (g) procedures.

Experimental Design

The design of the study required three independent variables (factors): susceptibility to persuasion (measured), message consensus (manipulated), and message authority (manipulated)—each of which were used to create the low and high conditions contained within the factorial design which is graphically represented in Figure 3.

Figure 3

2 X 2 X 2 Factorial Design

		Message Consensus (manipulated)			
		Low Message Consensus		High Message Consensus	
		Message Authority (manipulated)			
		Low Message Authority	High Message Authority	Low Message Authority	High Message Authority
Susceptibility to Persuasion (STP) (measured)	High STP				
	Low STP				

An online Qualtrics survey (see Appendix XX) was used to randomly assign participants to conditions and to collect information about demographics, the three independent variables (factors) and the primary dependent variable (positive academic behavioral intentions)—each of which are described in detail in the measures section below after we discuss the power analysis and details about the final participant sample (e.g., recruitment, data analysis cleaning, and final participant details).

Power Analysis

Considering the number of groups to be compared in the 2 (susceptibility to persuasion) X 2 (message consensus) X 2 (message authority) factorial design ($n=8$) and the resulting analysis of variance (ANOVA: fixed effects, special, main effects, and interaction) statistical tests to be calculated, an a priori power analysis was conducted using the G*Power 3.1.9.2 software.

For this analysis, alpha was set at .05 and power at .95. The following analyses were calculated, and the results are as follows: for a small effect size, $f^2 = .10$, $F(7, 2183) = 2.014$, Noncentrality parameter $\lambda = 21.91$, minimum $N = 2191$; for a medium effect size, $f^2 = .25$, $F(7, 349) = 2.036$, Noncentrality parameter $\lambda = 22.31$, minimum $N = 357$; and for a large effect size, $f^2 = .40$, $F(7, 144) = 2.078$, Noncentrality parameter $\lambda = 23.04$, minimum $N = 144$. Because a medium effect would require 357 participants and a large effect would require 144 participants, a sample of 400 participants were recruited to minimize a Type II error and test the hypotheses and research questions related to the factorial design of the dissertation study.

Sample

This section describes the recruitment, data cleaning and the final participant sample including demographic information.

Recruitment

Participants recruited for this study were lower-division undergraduate students enrolled full-time at the university. Criteria for recruitment included directory eligible, freshmen and sophomore undergraduate students who were enrolled at a large southeastern research university in the Fall 2020 (during the coronavirus global pandemic). Following IRB approval, the office of institutional research provided a list of 9,263 students who met the recruitment criteria. The list included first name, last name, and email contact information for each student. The list of 9,263 students was then loaded into a Constituency Relationship Management (CRM) tool powered by Salesforce, along with an HTML email recruitment message inviting students to complete the Qualtrics-based survey.

Three reminder messages were sent to those students that neither opened, clicked, or interacted with the recruitment email. The initial recruitment email invite was sent to a total of 9,263 students on 9/23/2020. Three days later, on 9/26/2020 an email reminder, with slightly modified language was sent to those that had neither opened, clicked or interacted with the email which included a population size of 8,765 recipients. A final reminder (third email) was sent two days later 9/28/2020 to 8,483 recipients. The initial email and subsequent reminders resulted in a total of 3,173 clicks and an average click through rate (CTR) of 4.5%. Of the 9,263 email invites, there were a total of 1,136

students who consented to participate in the study. Overall, there was a 12.3% response rate related to the described email recruitment strategy.

Data Cleaning

Data cleaning protocols were followed to preserve the integrity of the data and account for extreme variation in student responses (Tabachnick & Fidell, 2019). Data screening criteria included accuracy, outliers, and missing data.

We began by examining descriptive statistics for the 1,136 cases to screen for accuracy. The first criteria involved eliminating all participants who reported being younger than 18 and those who did not respond to the age question ($n=297$). Recall that one inclusion criteria for the study was that participants must be at least 18 years of age. Without knowing their age, there was no way to verify consent. The 297 cases were removed leaving 839.

If participants were missing more than 80% of the responses for the primary dependent variable (positive academic behavioral intentions) they were also removed from the dataset ($n=165$) leaving a total of 674 cases.

In the interest of accuracy, any participant that took less than 3 minutes or more than 60 minutes were removed from the dataset as outliers. The final average completion time was 7.31 minutes. A total of and 21 participants were removed because they completed the survey in less than 3 minutes and 11 participants were removed because they exceeded one hour. The 32 participants were removed from the 674 cases leaving 642 in the dataset.

The final question on the survey asked participants “overall, how honest would you say you were in answering this questionnaire” (see Appendix A). A total of 20

participants were removed because they indicated that they were extremely dishonest, leaving a total of 622 participants in the final dataset for analyses. In total, the data cleaning process reduced the final sample from 1,136 to 622—leaving 54% for analysis.

Participants

As described above the final dataset included a total of 622 respondents with an average age of 18.54 and a range of 18 to 20 years. The ethnic distribution for the participants was 76.9% white (N = 497), 8.5% Black or African American (N = 55), 5.9% Hispanic or Latino (N = 38), 5.7% Asian / Pacific Islander (N = 37), 2.8% reported their ethnicity as “other” (N = 18), and 0.2% Native American or American Indian (N = 1). The gender distribution yielded 441 participants who identified their gender as female (68.3%), 199 as male (30.8%), and 6 as “other” (0.9%) (e.g., agender, gender fluid, non-binary, and transmale). The university classification across the participants resulted in 366 freshmen (56.7%), 254 sophomores (39.3%), 24 juniors (3.7%) and 2 seniors (0.3%).

Setting

The study occurred at a land-grant, flagship, research I university located in the southeastern United States with an undergraduate enrollment of approximately 24,000 and a freshmen class size of approximately 5,400.

Measures

Independent Variables (Factors)

The three independent variables associated with the current dissertation are susceptibility to persuasion, message consensus and message authority. Susceptibility to persuasion was measured, whereas message consensus and message authority were manipulated. The primary dependent variable is positive academic behavioral intentions.

We begin this section by describing how we measured susceptibility to persuasion, followed by how we measured positive academic behavioral intentions. We conclude this section by describing how message consensus and message authority were manipulated along with the associated manipulation checks.

Susceptibility to Persuasion

An index was created to measure susceptibility to persuasion using ten questions adapted from Kaptein’s (2012) susceptibility to persuasion scale. The first five questions were designed to measure susceptibility to consensus, and the subsequent five questions to measure susceptibility to authority. The ten questions were evaluated using an exploratory factor analysis with principle axis factor (PAF) and Promax rotation (Carpenter, 2018) revealing an expected two factor solution (see Table 2).

Table 2

Initial Exploratory Factor Analysis for Susceptibility to Persuasion Index

	Factor	
	1	2
a1 When a university leader tells me something I tend to believe it is true.	.616	.111
a2 I am very inclined to listen to authority figures.	.834	.156
a3 I always obey directions from my superiors.	.710	.118
a4 I am more inclined to listen to an authority figure than a peer.	.690	.145
a5 I am more likely to do something if told, than when asked.	.538	.232
c1 If someone from my social network shares a good movie I tend to watch it.	.239	.144
c2 When I am in a new situation I look at others to see what I should do.	.133	.581
c3 I will do something as long as I know there are others doing it too.	.215	.717
c4 I often rely on other people to know what I should do.	.082	.726
c5 It is important to me to fit in.	.200	.573

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

One question (c1) was subsequently removed from the final index because it did not load on either factor using the significant cut-off loading criteria identified by Carpenter (2018, p. 39) of at least .40.

The final factor structure for the 9-item susceptibility to persuasion index is provided in Table 3 below.

Table 3

Final Factor Structure for Susceptibility to Persuasion Index

	Factor	
	1	2
a1 When a university leader tells me something I tend to believe it is true.	.612	.117
a2 I am very inclined to listen to authority figures.	.834	.167
a3 I always obey directions from my superiors.	.702	.125
a4 I am more inclined to listen to an authority figure than a peer.	.702	.158
a5 I am more likely to do something if told, than when asked.	.540	.240
c2 When I am in a new situation I look at others to see what I should do.	.123	.574
c3 I will do something as long as I know there are others doing it too.	.213	.721
c4 I often rely on other people to know what I should do.	.081	.729
c5 It is important to me to fit in.	.196	.573

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

The nine questions were then subjected to a reliability analysis using Cronbach's coefficient alpha with a resulting acceptable coefficient of .749. Next, the 9-items were combined into a mean composite index by summing the items and dividing by nine. The final composite index resulted in a mean of 5.03, a median of 5.11, and a standard deviation of .78. Because 48% of the 622 cases fell at or below 5.0 and 51% of the cases fell at 5.11 and above, a median split was used to create a final dichotomous index that was then used to group participants in to either a low susceptibility to persuasion condition ($N=299$; 48.1%) or a high susceptibility to persuasion condition ($N = 323$; 51.9%). Whereas susceptibility to persuasion as a construct was measured, the final two independent variables were manipulated. We discuss the process below.

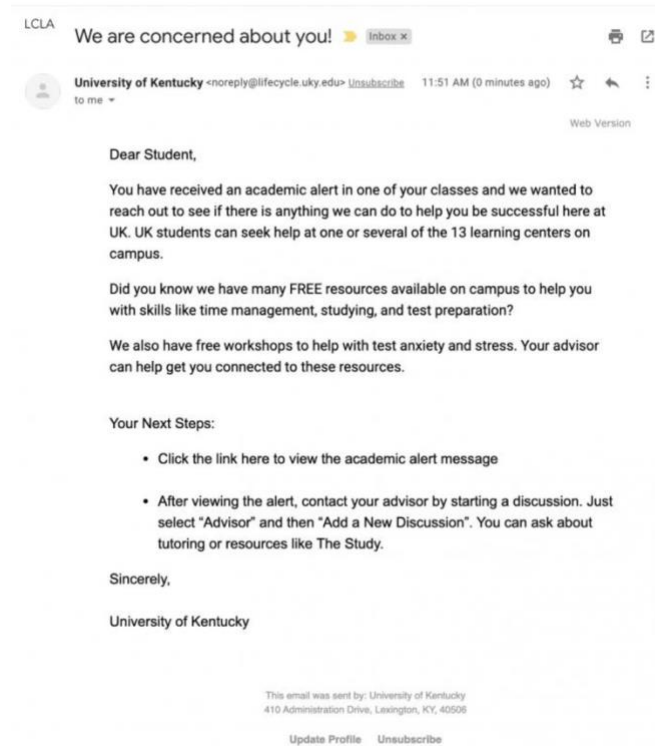
Message Manipulation Strategies

We chose to manipulate message consensus and message authority as part of the 2 X 2 X 2 factorial design. Both message consensus and message authority were manipulated using a strategic message design based on the persuasion principles put forth by Cialdini (2007), that is explained in detail below (see pages 117-121 of Appendix A for the specific format and content). The result of the manipulations was four specific messages (e.g., (1) a baseline low consensus, low authority message, (2) a high consensus, low authority message, (3) a low consensus, high authority message, and (4) a high consensus, high authority message).

We began the process by identifying a standard email message that represents a prototypical example of an institutional, early alert message (see Figure 4 for the baseline message that also functions as the low consensus, low authority message).

Figure 4

Prototypical Institutional Early Alert Message (Message #1 Low Consensus, Low Authority)

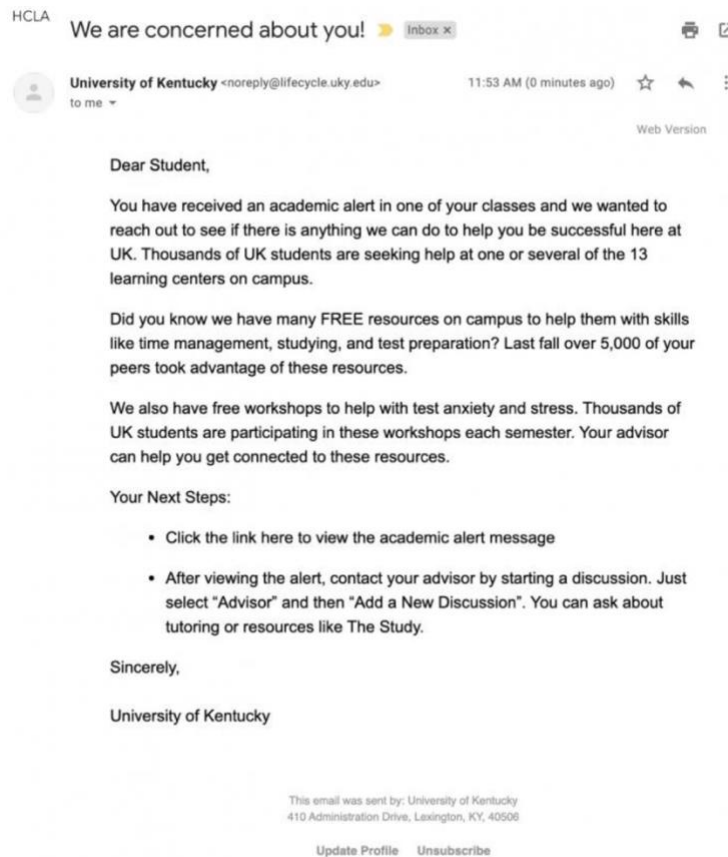


Message Consensus

We manipulated message consensus using the existing persuasion literature (Cialdini, 2009; Fishbein, 1979; Montaña et al., 2015). Whereas the baseline message (see Figure 4) represents a low consensus condition where there is no mention of consensus or what other students may be doing to help them improve, the high consensus message included three specific consensus manipulations: “thousands of UK students are seeking help at one or several of the 13 learning centers on campus”; “last Fall over 5,000 of your peers took advantage of these resources”; and “thousands of UK students are participating in these workshops each semester” (see Figure 5)

Figure 5

Message Consensus Manipulation (Message #2 High Consensus, Low Authority)

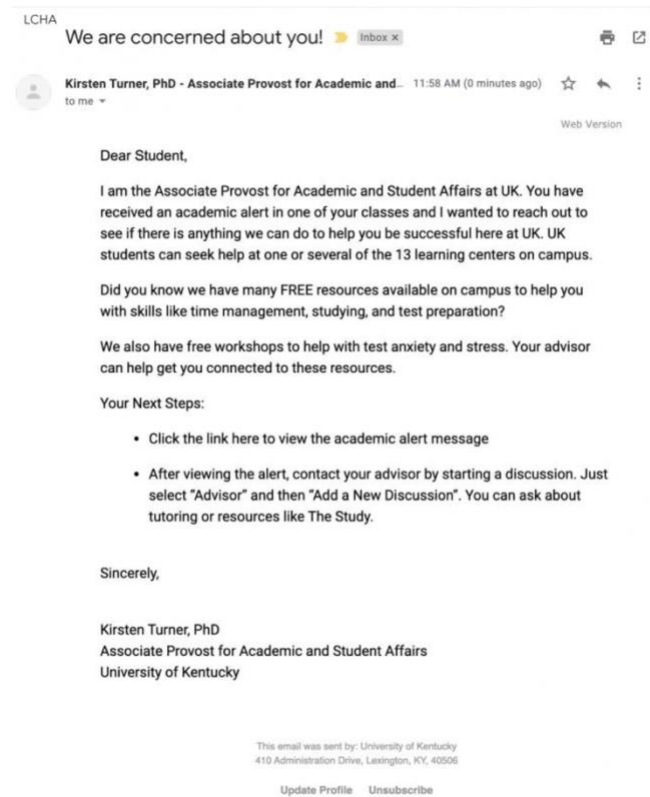


Message Authority

Message authority was manipulated using the existing persuasion literature (Cialdini 2009; McCroskey, 1986; O’Keefe, 2002) by modifying both the source and credibility of the sender. The name, title and recognition of the senders’ roles at the university were emphasized in the message to make the source more credible. We left the baseline message alone for the low authority condition (referring to the source as “The University of Kentucky”, but the specific manipulation for high message authority resulted in a message where the sender (Dr. Kirsten Turner) was clearly an authoritative (Associate Provost, Student and Academic Life), credible (PhD) and knowledge person (see Figure 6).

Figure 6

Message Authority Manipulation (Message #3 Low Consensus, High Authority)

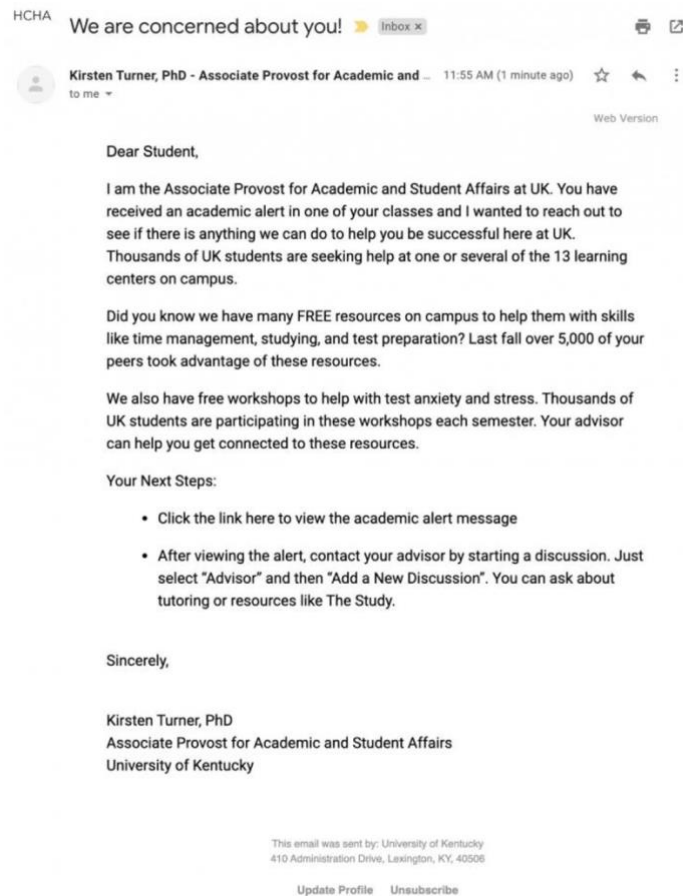


Combining High Levels of Message Consensus and Authority

A final message was created using high levels of both message consensus and message authority to test the research questions regarding the additive effects of both message consensus and message authority (see Figure 7).

Figure 7

Combined Consensus and Authority Message Manipulation (Message #4 High Consensus, High Authority)



Manipulation Check

Consensus Message Manipulation

In order to ensure the consensus message strategy was correctly manipulated across the low and high consensus messages, a series of three questions were developed

using a 7-point Likert-type scale ranging from strongly disagree (1) to strongly agree (7) (e.g., 1) the message helped visualize and understand behavior of *other students* making use of academic resources on campus, 2) the message expressed the fact that there was a *large group* taking advantage of academic resources, and 3) the message gave a sense that *other students* are engaging in available academic resources. See Appendix A on pages 120-121 for actual survey questions. The three consensus questions were combined into one mean composite index with a resulting Cronbach's coefficient alpha of .70. An independent samples t-test verified a significant difference between the low consensus messages (N = 306, M=4.36, SD=.70) and the high consensus message conditions (N = 316, M=4.71, SD=.72) in the expected direction [$t(620) = 6.01, p < .001$].

Authority Message Manipulation

In order to ensure the authority was manipulated consistently across the low and high authority messages, a series of three questions using a 7-point Likert-type scale ranging from strongly disagree (1) to strongly agree (7) were developed (e.g., 1) the message was from someone with a job title that presumably took years of work and achievement, 2) the message was from a sender who is perceived as a subject matter expert, and 3) the sender made you feel like they were in a position of authority). See Appendix A on page 120 for actual survey question wording. The three questions were combined into one mean composite scale with a resulting Cronbach's coefficient alpha of .74. An independent samples t-test verified a significant difference between the low authority messages (N = 305, M=4.99, SD=1.06) and the high authority message conditions (N = 317, M=5.54, SD=.89) in the expected direction [$t(592.996) = 7.11, p < .001$].

Dependent Variable: Positive Academic Behavioral Intentions

Positive academic behavioral intentions were measured using six questions on a 7-point Likert-type scale ranging from extremely unlikely (1) to extremely likely (7) (see appendix A pages 117-118). The questions focused on six specific academic behaviors including their intention to: take action following the receipt of an academic alert; utilize free resources offered from the university; visit a tutoring center; attend a free workshop on test anxiety or stress; view the academic alert message; study harder. Responses to these six items were combined into a mean unidimensional composite variable to measure positive academic behavioral intentions ($\alpha = .826$). See Table 4 for factor loadings on each of the six questions measuring positive academic behavioral intentions.

Table 4

Factor Loadings for Positive Academic Behavioral Intentions

	Factor 1
Take action following receiving an alert	.778
Utilize the free resources offered by the university	.895
Go visit a tutoring center such as "The Study"	.837
Attend a free workshop on test anxiety and stress	.514
Click the link to view the alert message	.591
Go study harder	.471

Extraction Method: Principal Axis Factoring.

^a. 1 factors extracted. 6 iterations required.

Procedures

After approval by the Institutional Review Board (IRB), the study was deployed, and participants were recruited by email (for specific details see Recruitment section above). Participants were asked to complete basic student information, such as bio-demographic details, including gender and student classification. The inclusion criteria for this study, included age (must be 18 years or older), and enrollment status (students who were enrolled for the fall 2020 semester at a large southeastern research university). They survey also included the Susceptibility to Persuasion Index. Following the completion of the demographic questions and the Susceptibility to Persuasion Index, participants were randomly assigned to one of the four message conditions previously described (e.g., low consensus, low authority; high consensus, low authority; high authority, low consensus; high consensus, high authority). The Qualtrics randomizer feature was implemented in the survey flow to randomize participants into the four message conditions. The total participation time did not exceed 60 minutes and the average completion time was 7.31 minutes.

This chapter provided a detailed explanation of: (a) the experimental design (and related a priori power analysis), (b) sample, including recruitment (c) data cleaning (d) participants, (e) measures, (f) message manipulation strategies and related manipulation checks, and (g) procedures. Results of each of the hypotheses and related statistical analyses are provided in Chapter 4.

CHAPTER 4. RESULTS

This chapter provides the results associated with the three research hypotheses and four research questions. The statistical analyses rely most heavily on factorial ANOVA. Recall that the purpose of this dissertation is to determine how persuasion principles (specifically susceptibility to persuasion, message consensus and message authority) embedded within the context of academic early alert systems, might influence positive academic behavioral intentions. Descriptive statistics for each cell are provided in Table 5.

Table 5

2 x 2 x 2 Message Descriptive Statistics

		Message Authority			
		Low Authority Message		High Authority Message	
		Susceptibility to Persuasion			
		Low Susceptibility to Persuasion	High Susceptibility to Persuasion	Low Susceptibility to Persuasion	High Susceptibility to Persuasion
Message Consensus	High Consensus Message	[<i>M</i> = 5.286, <i>SD</i> =1.119, <i>n</i> =70]	[<i>M</i> = 5.641, <i>SD</i> =1.021, <i>n</i> =85]	[<i>M</i> = 5.565, <i>SD</i> = .825, <i>n</i> =80]	[<i>M</i> = 5.742, <i>SD</i> =.923, <i>n</i> =80]
	Low Consensus Message	[<i>M</i> = 5.248, <i>SD</i> =1.053, <i>n</i> =68]	[<i>M</i> = 5.604, <i>SD</i> =1.064, <i>n</i> =82]	[<i>M</i> =5.342, <i>SD</i> =1.105, <i>n</i> =80]	[<i>M</i> =5.836, <i>SD</i> =.945, <i>n</i> =76]

Hypothesis One: Main Effect for Susceptibility to Persuasion

H₁ predicted there will be a main effect of susceptibility to persuasion, such that individuals that are high on susceptibility to persuasion will report more favorable positive academic behavioral intentions than individuals who are low susceptibility to persuasion.

Results revealed a statistically significant main effect for susceptibility to persuasion on positive academic behavioral intentions [$F(1, 613) = 18.11, p = .001, \eta^2_{\text{partial}} = .029$]. Individuals who had a high susceptibility to persuasion [$M = 5.70, SD = .99$] reported significantly greater levels of positive academic behavior intentions than individuals who have a low susceptibility to persuasion [$M = 5.37, SD = 1.03$]. Hypothesis one was supported.

Hypothesis Two: Main Effect for Consensus Messages

H₂ predicted there will be a main effect for consensus messages, such that individuals who are exposed to high consensus messages will report more favorable positive academic behavioral intentions than individuals who are exposed to low consensus messages.

Results were not statistically significant for the main effect of consensus messages on positive academic behavior intentions [$F(1, 613) = .397, p = .529, \eta^2_{\text{partial}} = .001$]. Individuals who received a high consensus message reported slightly higher (but not statistically significant) positive academic behavioral intentions [$M = 5.57, SD = .98$] than individuals who received a low consensus message [$M = 5.51, SD = 1.06$].

Hypothesis two was not supported.

Hypothesis Three: Main Effect for Authority Messages

H₃ predicted a main effect for authority messages, such that high authority messages will result in more favorable positive academic behavioral intentions than low authority messages.

Results revealed a statistically significant main effect for authority messages on positive academic behavioral intentions [$F(1, 613) = 4.71, p = .030, \eta^2_{\text{partial}} = .008$]. Individuals who received a high authority message [$M = 5.62, SD = .97$] reported significantly greater levels of positive academic behavioral intentions than individuals who received a low authority message [$M = 5.46, SD = 1.07$]. Hypothesis three was supported.

Research Question One: Susceptibility to Persuasion X Message Consensus

Interaction

RQ1 explored the susceptibility to persuasion by message consensus interaction. Do individuals with a high susceptibility to persuasion who receive a high consensus message, report more favorable positive academic behavioral intentions?

Results were not statistically significant for the susceptibility to persuasion by message consensus two-way interaction [$F(1, 613) = .954, p = .329, \eta^2_{\text{partial}} = .002$]. Thus, results fail to reject the null hypothesis.

Research Question Two: Susceptibility to Persuasion X Message Authority

Interaction

RQ2 explored the susceptibility to persuasion by message authority interaction. No significant interactions were revealed for the susceptibility to persuasion by message

authority interaction [$F(1, 613) = .016, p = .901, \eta^2_{\text{partial}} = .0001$]. Thus, results fail to reject the null hypothesis.

Research Question Three: Message Consensus X Message Authority Interaction

RQ3 explored the interaction between message consensus and message authority on positive academic behavioral intentions. The two-way interaction was not significant [$F(1, 613) = .027, p = .870, \eta^2_{\text{partial}} = .0001$]. Thus, results fail to reject the null hypothesis.

Research Question Four: Susceptibility to Persuasion X Message Consensus X Message Authority Interaction

RQ4 explored the three-way interaction between susceptibility to persuasion, message consensus and message authority. The three-way interaction was not significant [$F(1, 613) = .947, p = .331, \eta^2_{\text{partial}} = .002$]. Thus, results fail to reject the null hypothesis.

Taken together, results support research hypotheses one and three. Main effects were revealed for both susceptibility to persuasion and message authority. However, none of the additive effects of either susceptibility to persuasion, message consensus or message authority operating in tandem produced significant interactions. The next chapter discusses the implications, limitations and future directions related to the current research program focused on academic early alerts and persuasive message design.

CHAPTER 5. DISCUSSION

Persuasion scholars have written extensively about how well-placed communication interventions can be used to change, modify, or influence human behavior. However, as discussed in chapter one, there has been little research testing persuasion principles in a higher education setting—especially how they can be used to increase student success. Student success is a priority for higher education. Much has been written about how to improve student success and retention. One especially important strategy is the use of academic early alert systems. The current study tests whether persuasion principles can be used to improve academic early alert systems, and by extension, advance higher education student success and retention. This chapter discusses the implications, limitations and future directions related to the results of this dissertation.

Implications

Recall that the purpose of the current dissertation is to determine how persuasion principles (specifically susceptibility to persuasion, message consensus and message authority) embedded within the context of academic early alert systems, might influence positive academic behavioral intentions. The results of this dissertation point to several implications regarding this purpose, including those related to theory, previous research, and pragmatic application.

Cialdini (2008) provides the primary theoretical framework for the current study when he identifies six universal persuasion principles: reciprocity, scarcity, authority, commitment, and consistency, liking and consensus. This dissertation tested two of the persuasion principles: consensus and authority. Message consensus, as results revealed,

did not improve student positive academic behavioral intentions. This could have been an artifact of how consensus was manipulated. On the other hand, it may well be that consensus does not impact whether an individual would seek help after receiving an academic early alert.

Message authority, however, did have a significant impact. That is, academic early alert messages high on message authority (e.g., the message was from someone with a job title that presumably took years of work and achievement, the message was from a sender who is perceived as a subject matter expert, and the sender made you feel like they were in a position of authority) were instrumental in improving positive academic behavioral intentions. A similar result was revealed for susceptibility to persuasion.

Individual differences are psychological traits or chronic tendencies that convey a sense of consistency, internal causality, and personal distinctiveness. Individual differences are considered to play an elemental role in how people generally react across the situations (Thompson, 2018). Individuals who were high on susceptibility to persuasion were also more likely to report greater intentions to act or seek help regardless of message type (authority or consensus). If someone is susceptible to persuasion, it is more likely they are going to act. When Cialdini's (2009) framework is used to manipulate persuasive messages, it is important that individual differences (e.g., susceptibility to persuasion) are aligned with the message type to have the greatest impact on human behavior.

Along with Cialdini's (2009) primary framework, both Petty and Cacioppo's (1984) ELM and Sundar's (2008) MAIN Model can also be useful in framing the

persuasive impact of messages. In Chapter 2 we discussed the relationship between Cialdini's (2009) persuasion principles and Petty and Cacioppo's (1986) ELM. This relationship comes into focus now. The peripheral route-based tactics to elicit persuasion effects help to support the elaboration likelihood model, which assumes that our participants are responding to issue-relevant information, which was the case with this dissertation study. The ELM was originally designed to map the individual difference of need for cognition with message characteristics that would encourage either central or peripheral processing. Clearly, the persuasive principles are functioning as peripheral cues in the current dissertation because none of the messages require deep cognitive processing. Using the conceptual argument inherent in the ELM that individual differences are related to message characteristics, the current dissertation used Kaptein's (2009) susceptibility to persuasion construct to measure individual differences and map them onto Cialdini's persuasive principles.

These results are consistent with previous research. For example, Petty Cacioppo, and Goldman (1981) studied the argument strength and communicator strength on the effectiveness of persuasion. The study found that high-topic-relevance receivers were significantly affected by the quality of arguments contained in the message but were not affected by the heuristic cue of the speaker's expertise. Conversely, low-topic-relevance receivers were more affected by expertise cues than by variations in argument quality (O'Keefe, 2016, pg. 151).

Using the MAIN Model (Sundar, 2008) along with Cialdini's persuasion principles also provides fertile ground for thinking about modality and persuasion. The current dissertation focused solely on email as the single modality for both recruitment

and message delivery but did not consider the impact of multiple modalities and their impact on persuasion.

It was surprising that none of the two-way interaction effects associated with the research questions were significant because the lack of significance suggests that Cialdini's persuasion principles operate independently and do not layer or interact in terms of their performance on persuasion. In one of Petty and Cacioppo's (1984) early ELM studies, their results showed that increasing the number of arguments in a message could positively affect persuasion. That is, their position was that the more arguments in a message, the more persuasive the message will be. There are several reasons why the interaction effects in the current study were not significant. For example, the selective message strategies, while defensible, are different. Authority can clearly be embedded in the academic early alert messages. While consensus can be manipulated in a message, it is more of a perceptual construct regarding what one's peers are doing with respect to the use of academic resources. There is a natural disconnect between what an experimental message is saying and the reality of someone's lived experience. Consensus, or "social proof" is the principle that explains how we look to the actions of others to determine our own (Cialdini, 2009). Given the timing of the current study, and the fact that the university campus and many of our city and state communities were in the middle of a global pandemic, several classes, facilities, and businesses were closed. The fall 2020 semester was unique in higher education because of the global pandemic. Students battled the oddities that COVID-19 brought to learning, socialization and even a student's ability to focus, stay engaged in issue-relevant information and take advantage of campus resources after receiving an academic early alert. As a result, the consensus construct

may have been adversely affected and our manipulation may not have been as successful as it would have been in a non-pandemic year. Perhaps another one of Cialdini (2008) principles (e.g., reciprocity) might interact better with authority than consensus during a global pandemic.

Universities who are interested in improving student success are strongly advised to think carefully about their constituents and which persuasion principles are best suited for their students. Given the expense and resources associated with a campus wide intervention strategy, an institution cannot afford to haphazardly implement academic early alert systems without the necessary considerations and message pilot testing. The results of this dissertation provide the necessary playbook – the players are different, and the persuasive principles may need to be altered, but the strategy is clear. How would the campus owners of the early system know which message to select that would have the greatest impact on the student population? For the students examined in this study, we understand that messages of authority elicited the most positive academic behavioral intentions following the receipt of an academic early alert. Moreover, most higher education institutions don't have communication strategies grounded in theory that would guide their decisions and increase the likelihood their intervention messages are read and acted upon.

Limitations

The results and discussion of this dissertation should be understood and considered within the scope of the limitations. Although the experimental design of the current dissertation study is rigorous and systematic, the data were collected using an online survey that relied primarily on self-reported responses. Any self-reported data

need to be interpreted with caution. We included an “honesty” question to eliminate any participants who did not approach the completion of the survey honestly, but individuals tend to over-report positive behaviors and under-report negative behaviors. Measuring behavioral intentions instead of actual behavior is also a limitation of the current study

Another limitation mentioned earlier is the use of email as a mono-modality. We don’t know if another modality—or a combination of modalities may have been more effective than email alone. Considering the environment and setting in which the study was conducted, the use of scenarios to manipulate the critical factors (e.g., message consensus and message authority), might have been difficult for student participants to visualize. Mask wearing, physical distancing and other disruptions presented by the global coronavirus pandemic may have adversely impacted student focus and attention to the survey scenarios. Because the recruitment of undergraduate students for the dissertation study relied on voluntarily participation, a self-selection bias may have impacted the results of the current study.

Put simply, because this study took place during the fall 2020 semester, during the COVID-19 global pandemic, the impact on students, staff and faculty were unique across the world, and for this study, decisions to *measure* intention rather than *observe* action were crucial in its effects on the study. However, what isn’t clear is how much participants were negatively affected in terms of their attention, attitudes, and perceptions towards the independent and dependent variables as a part of this study.

External validity, or the extent to which the results of this study can be generalized from the statistic of the sample to the parameter of the population is threatened. While results can definitely be generalized to other undergraduate students at

the same university, caution should be exercised when attempting to generalize beyond the current circumstances because the population, the setting, and the nature in which the dependent variable was measured might not be fully transferable to other situations.

Cialdini's (2009) theoretical framework and persuasion principles are explained using a fundamental interpretation of concepts found in published communication literature. Alternative interpretations are possible but based on a thorough exploration of the principles and the theoretical definitions, a relationship and crosswalk were developed to defend the current interpretations of Cialdini's commercially popular persuasion principles. Further, as discussed earlier, only two of the six persuasion principles (consensus and authority) were tested as a part of this dissertation. Other persuasion principles could yield different results.

The measurement of behavioral intentions instead of actual behavior is also a limitation. Although the message design strategy was peer-reviewed and validated through manipulation checks, may be misinterpreted and or misguided in the reporting back intended actions. Intended actions are not always the same as observable or actual actions—though intentions are a necessary condition for behavior to occur. With an understanding of the potential limitations, we turn our attention to possible future directions.

Future Directions

Ultimately, the first, and most logical future direction is to continue investigating academic early alert systems in higher education by exploring the interaction between individual difference variables and specific messages that are tailored using Cialdini's other persuasion principles (e.g., liking, reciprocity, scarcity, and consistency). In other

words, future research should explore how other persuasion principles—beyond authority--function to encourage at-risk students to seek academic help.

While the higher education context is appropriate for studying academic early alert systems, there are other outcomes and contexts that could be used to study persuasive messaging that will also increase engagement, retention, and enrollment within a higher education setting. For example, administrators may want to focus on student readiness, academic confidence or even resilience as individual difference variables that may interreact with persuasive message characteristics to positively impact student belonging and other outcomes related to student retention and success. Future research should explore the possibilities of covariates such as awareness and perception of the arguments being presented and how they interact to influence student success. Other dependent variables could be evaluated outside of higher –and include studies in private corporations, K-12 education, or perhaps philanthropic service organizations. For example, persuasion principles and susceptibility to persuasion could be applied to areas within politics, education, marketing, negotiations, consumer behavior, and health communication. Some of the health campaign research is already in progress (see Rademeyer & Cialdini, 2002). Any of these contexts would point researchers in new directions for studying susceptibility to persuasion set forth by Kaptein (2009) and persuasion principles as explicated by Cialdini (2008). Future scholarship could also include a measurement of one’s involvement on how issue relevant the action (outcome of the persuasion attempt) is for them. Involvement could be treated as an independent variable or as a covariate.

Another future direction involves the measurement of actual academic behaviors rather than behavioral intentions. Online surveys could be used—but future research should consider observation and behavior-based measures such as actual check-in and engagement data related to campus resources for at-risk students.

Future researchers should also be encouraged to determine how the persuasion principles may differ based on age, sex, race, or other individual differences. Are some individual differences (e.g., females vs. males; caucasian vs. non-caucasian students) more susceptible to persuasion and the specific principles embedded in social influence messages?

Personalized persuasion (tailoring) has proven beneficial over non-personalized versions in similar studies (Kaptein, Markopoulos, de Ruyter, & Aarts, 2009). Ajzen and Fishbein's theory of planned behavior (1980) could reinforce and add to explanations afforded by Cialdini, Petty and Cacioppo, and other theories, to help us understand how the susceptibility to persuasion scale and the persuasion principles help to encourage positive behaviors.

Technological advancements will improve our ability to collect, store and act on individualized information. Furthermore, technological innovations will enable communicators to scale persuasive strategies using individualized information. Widespread adoption of information and communication technologies has made it possible to adaptively assign people to different messages, experiences, and interventions. Future research should continue to focus on technological affordances (MAIN) and how the affordances associated with the technology can improve the tailoring and efficacy of persuasive messages. It is now suitable to think of many

empirical and mathematical efforts in the applied behavioral sciences as sequential decision problems that can be solved with the application of technology (Eckles and Kaptein, 2019).

There is still more work to be done to meet the ongoing challenge confronting higher education. The efficacy of early alerts and indicators for success are even more important in environments where there is less social, physical, and observational interaction and engagement. Higher education will certainly change because of the global pandemic. Friedman (2020, NYT) states that after the pandemic, there will be a mass reskilling of our workers, and students. Achievement gaps and student readiness will continue to be the focus of higher education as we all attempt to improve student success. The impact of the global pandemic on students, staff and faculty are unique across the world, and for this study, it is unclear whether participants were affected in terms of their attention, attitudes, and perceptions towards the independent and dependent variables as a part of this study. Future research should consider replicating the current study to determine how, if at all, the pandemic may have negatively impacted the results.

Having considered the implications, limitations, and future directions, we turn back to the primary purpose and context of the current dissertation. Persuasion, in the context of a higher education setting, within the use-case of academic alerts and message strategy deployment is possible to achieve in a practical manner, without much administrative, technical and data resources impacted. It will take a clear understanding of the distinct population to serve (e.g., first generation, low-income, first-time freshmen) to understand their susceptibility to persuasion and relative persuasion principle in which they are most susceptible to. This research leads and implores practitioners to look further

for those metrics, outcomes, and dependencies to make an individual difference by implementing broad based strategies that can scale across technologies, messages, and populations. Ultimately, to make a difference in the outcome of already established goals and strategies for those that need positive influences the most, to persuade them towards a life of meaning, purpose, and success.

Appendix A

Survey Instrument

Introduction, Consent + Cover Letter

Welcome!

Thanks for being a part of this study. Before we get started, you will have to review the details of the study and confirm that you understand.

INTRODUCTION

Thank you for participating in the Academic Alert Messaging Study. This study evaluates your communication style and in particular your motivation and intentions to attend or visit a learning center following the receipt of messages.

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about communication preferences and susceptibility to persuasion through a messaging design strategy. You are being invited to take part in this research study given you are an enrolled student at the University of Kentucky. If you volunteer to take part in this study, you will be one of about 400 people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Tyler Gayheart (jtgayh2@uky.edu), a doctoral candidate at the University of Kentucky Department of Communication. He is being guided in this research by Dr. Derek Lane (derek.lane@uky.edu). There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

This experimental study seeks to test differentiated messaging can be used for effectively communicating with students.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

Participation in this research study is completely voluntary. You have the right to withdraw at anytime or refuse to participate entirely without jeopardy to your academic status, GPA or standing with the university. If you desire to withdraw, please close your internet browser and end the survey to withdraw. If you choose not to receive email invitations to the survey, please email the researcher at jtgayh2@uky.edu and he will remove you from any further communication. The only inclusion criteria for this study is to be 18 years or older.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The research procedures will be conducted at all online via the Qualtrics survey platform. Participants will be provided with a link to complete the survey. The survey will take no longer than 20 minutes to complete.

WHAT WILL YOU BE ASKED TO DO?

As a part of this study you will be asked to complete a brief informational survey, which includes questions related to your communication style. The survey will present and display a randomized email message that you must read thoroughly and provide feedback related to those messages.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

This study should pose no more risk than that experienced by the students in everyday life. It is not expected that participants would encounter any physical, psychological, social, or legal risks.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

There is no guarantee that you will get any benefit from taking part in this study. Your willingness to take part, however, may, in the future, help society as a whole better understand this research topic.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. As a student, if you

decide not to take part in this study, your choice will have no effect on your academic status or grade in the class.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

This study is completely voluntary. If you do not wish to take part in this study, please close your internet browser to end the survey. This research is not connected to a course that offers extra-credit opportunity and therefore there is no alternative choices to receive extra credit as a part of your course.

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with participating in this study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will not receive any rewards or payment for taking part in the study.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep confidential all research records that identify you to the extent allowed by law.

Your research result information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered and not individual identifiable results. This study is not collected personal identifiable information. Your submission and therefore your results will be completely anonymous. You will not be personally identified in these written materials. We may publish the results of this study; no information provided as a part of this study collects personal identifiable information, all responses will be anonymous.

No personal identifiable information will be collected as a part of this survey. Your submission and therefore your results will be completely anonymous.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study. You may also skip a question if you are not comfortable answering it.

The individuals conducting the study may need to withdraw you from the study. This may occur if you are not able to follow the directions they give you.

WHAT ELSE DO YOU NEED TO KNOW?

There is a possibility that the data collected from you may be shared with other investigators in the future. If that is the case the data will not contain information that can identify you unless you give your consent or the UK Institutional Review Board (IRB) approves the research. The IRB is a committee that reviews ethical issues, according to federal, state and local regulations on research with human subjects, to make sure the study complies with these before approval of a research study is issued.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

If you have questions you do not feel comfortable asking the researcher, you may contact, Dr. Derek Lane at derek.lane@uky.edu. If you have questions about the study, please contact Tyler Gayheart at jtgayh2@uky.edu or 502-382-7885. If you have complaints, suggestions, or questions about your rights as a research volunteer, please contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428.

Thank you for your participation.

Sincerely,

Tyler Gayheart, doctoral candidate
Principal Investigator
College of Communication and Information
University of Kentucky
email: jtgayh2@uky.edu

Derek Lane, Ph.D
Principal Investigator
Professor, College of Communication and Information
University of Kentucky

I have read and understood the above consent form and desire of my own free will to participate in this study.

Yes

No

Demographics Section

The following questions are meant to get to know who you are better. All of this information is anonymous, but we'll need to know this so we can further our research.

What is your age?

Ethnicity origin (or Race): Please specify your ethnicity.

What is your gender?

Male

Female

Other

What is your current classification (class rank)? (please select your class rank from the dropdown list)

University Experiences

Have you ever received an academic alert of any kind at the University of Kentucky?

- Yes
- No
- Not sure

Have you ever utilized or participated in the learning resources on campus (tutoring, The Study, etc.)

- Yes
- No
- Not Sure

Please indicate the frequency in which you have visited learning resources on campus. (e.g. tutoring, The Study, etc.)

- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| A great deal | A lot | A moderate amount | A little | None at all |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

How familiar are you with your university academic advisor?

Extremely familiar Very familiar Moderately familiar Slightly familiar Not familiar at all

Use the slider to record your current university Grade Point Average (GPA).

0 0.4 0.8 1.2 1.6 2 2.4 2.8 3.2 3.6 4

Current GPA

Persuasion Principle Preference Section (STPS) Authority + Consensus

The following section measures your communication preferences as they relate to certain concepts about credibility and social influences. Take your time to complete each of the questions. There are no correct answers, just what you believe to be true.

The following questions are related to authority and communication exchanges.

Strongly agree Agree Somewhat agree Neither agree nor disagree Somewhat disagree Disagree Strongly disagree

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
When a university leader tells me something I tend to believe it is true.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am very inclined to listen to authority figures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always obey directions from my superiors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more inclined to listen to an authority figure than a peer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more likely to do something if told, than when asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions are related to consensus and communication exchanges.

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
If someone from my social network shares a good movie I tend to watch it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am in a new situation I look at others to see what I should do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
I will do something as long as I know there are others doing it too.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often rely on other people to know what I should do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me to fit in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Setting Scenario Imagine...




Now that we've got that other stuff out of the way, we'd like for you to take a moment and imagine...





You have received an academic alert through your University of Kentucky email based on poor performance on your most recent exam in your most difficult course.

Read through the email message carefully, and then answer the questions that follow.

Message_group_HCLA

Please read the email message carefully and thoroughly. You will be asked to respond to questions related to this message.

HCLA **We are concerned about you!**  Inbox x  

 **University of Kentucky** <noreply@lifecycle.uky.edu> 11:53 AM (0 minutes ago)   

to me ▾ [Web Version](#)

Dear Student,

You have received an academic alert in one of your classes and we wanted to reach out to see if there is anything we can do to help you be successful here at UK. Thousands of UK students are seeking help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources on campus to help them with skills like time management, studying, and test preparation? Last fall over 5,000 of your peers took advantage of these resources.

We also have free workshops to help with test anxiety and stress. Thousands of UK students are participating in these workshops each semester. Your advisor can help you get connected to these resources.

Your Next Steps:

- Click the link here to view the academic alert message
- After viewing the alert, contact your advisor by starting a discussion. Just select "Advisor" and then "Add a New Discussion". You can ask about tutoring or resources like The Study.


Sincerely,

University of Kentucky

This email was sent by: University of Kentucky
410 Administration Drive, Lexington, KY, 40506

[Update Profile](#) [Unsubscribe](#)

HCHA

We are concerned about you!  Inbox x



Kirsten Turner, PhD - Associate Provost for Academic and ... 11:55 AM (1 minute ago)
to me ▾



[Web Version](#)

Dear Student,

I am the Associate Provost for Academic and Student Affairs at UK. You have received an academic alert in one of your classes and I wanted to reach out to see if there is anything we can do to help you be successful here at UK.

Thousands of UK students are seeking help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources on campus to help them with skills like time management, studying, and test preparation? Last fall over 5,000 of your peers took advantage of these resources.

We also have free workshops to help with test anxiety and stress. Thousands of UK students are participating in these workshops each semester. Your advisor can help you get connected to these resources.

Your Next Steps:

- Click the link here to view the academic alert message
- After viewing the alert, contact your advisor by starting a discussion. Just select "Advisor" and then "Add a New Discussion". You can ask about tutoring or resources like The Study.

Sincerely,




Kirsten Turner, PhD
Associate Provost for Academic and Student Affairs
University of Kentucky





This email was sent by: University of Kentucky
410 Administration Drive, Lexington, KY, 40506

[Update Profile](#) [Unsubscribe](#)

Message_group_LCLA

Please read the email message carefully and thoroughly. You will be asked to respond to questions related to this message.

LCLA We are concerned about you!  Inbox x  

 **University of Kentucky** <noreply@lifecycle.uky.edu> [Unsubscribe](#) 11:51 AM (0 minutes ago)   
to me ▾ Web Version

Dear Student,

You have received an academic alert in one of your classes and we wanted to reach out to see if there is anything we can do to help you be successful here at UK. UK students can seek help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources available on campus to help you with skills like time management, studying, and test preparation?

We also have free workshops to help with test anxiety and stress. Your advisor can help get you connected to these resources.

Your Next Steps:

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- After viewing the alert, contact your advisor by starting a discussion. Just select "Advisor" and then "Add a New Discussion". You can ask about tutoring or resources like The Study.

Sincerely,

University of Kentucky


This email was sent by: University of Kentucky
410 Administration Drive, Lexington, KY, 40506

[Update Profile](#) [Unsubscribe](#)

msg_group_LCHA

Please read the email message carefully and thoroughly. You will be asked to respond to questions related to this message.

LCHA

We are concerned about you!  Inbox x



Kirsten Turner, PhD - Associate Provost for Academic and... 11:58 AM (0 minutes ago)
to me ▾



[Web Version](#)

Dear Student,

I am the Associate Provost for Academic and Student Affairs at UK. You have received an academic alert in one of your classes and I wanted to reach out to see if there is anything we can do to help you be successful here at UK. UK students can seek help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources available on campus to help you with skills like time management, studying, and test preparation?

We also have free workshops to help with test anxiety and stress. Your advisor can help get you connected to these resources.

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Sincerely,

Kirsten Turner, PhD
Associate Provost for Academic and Student Affairs
University of Kentucky

This email was sent by: University of Kentucky
410 Administration Drive, Lexington, KY, 40506

[Update Profile](#) [Unsubscribe](#)

Manipulation checks | recall

In your scenario, the message you reviewed was from someone with a job title that presumably took years of work and achievement to acquire or earn.

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your scenario, the message you reviewed made you feel as though the sender might be a subject matter expert as it relates to student and academic services.

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your scenario, the sender of the email made you feel like they were in a position of authority or power at the university.

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your scenario, the message you reviewed helped you visualize and understand the behavior of other students **making use of** academic resources on campus.

Strongly	Agree	Somewhat	Neither	Somewhat	Disagree	Strongly
----------	-------	----------	---------	----------	----------	----------



In your scenario, the message you felt as though there was a large group that were taking advantage of academic resources.



In your scenario, the message you reviewed gave you a sense that other students are engaging in available academic resources know something you don't.



In your scenario, the message you reviewed was believable.



Think about taking action to visit a learning center or seek academic help at UK. After reading the message, how likely are you to seek help?



How likely are you to seek help after reading the message? Not likely at all Very Likely

0 10 20 30 40 50 60 70 80 90 100

Think about the message you just read. Please answer each of the following questions about how likely you would be to...

	Extremely likely	Moderately likely	Slightly likely	Neither likely nor unlikely	Slightly unlikely	Moderately unlikely	Extremely unlikely
Take action following receiving an alert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilize the free resources offered by the university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Go visit a tutoring center such as "The Study"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attend a free workshop on test anxiety and stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click the link to view the alert message	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Extremely likely	Moderately likely	Slightly likely	Neither likely nor unlikely	Slightly unlikely	Moderately unlikely	Extremely unlikely
Go study harder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Overall, how honest would you say you were in answering this questionnaire?


	Extremely honestly	Moderately likely	Slightly likely	Neither likely nor unlikely	Slightly unlikely	Moderately unlikely	Extremely unlikely
My honesty level was ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


Powered by Qualtrics


Appendix B

Email Invitation

Final Reminder: You're Invited to Take Part in an Important Study at UK

 **Tyler Gayheart, Doctoral Candid...** Tuesday, December 1, 2020 at 2:20 PM

To:  Gayheart, Tyler



Dear %%Contact: First Name%%,

This is a **final** reminder that you're being asked to participate in a study conducted by Principal Investigator, Tyler Gayheart, a doctoral candidate in communication at the University of Kentucky. This research study will examine students' behavior as it relates to academic alert messages. You will be asked to complete a survey to measure your communication preferences and perceptions.

Please complete the questionnaire independently. Please be sure to read each section carefully and answer the questions honestly and to the best of your knowledge. There are no right or wrong answers.

Participation in this study is voluntary; you may stop completing the questionnaire at any time without fear of penalty. There are no known risks associated with participating in this study. It should take approximately 15-20 minutes to complete the survey. This survey is completely voluntary and does not offer course credit.

By clicking the button, link below, or copying and pasting it into your web browser, you are providing your consent to participate in the study.

https://uky.az1.qualtrics.com/jfe/form/SV_0B8wXDaxDbRa4uN

[Begin Survey Now](#)

Thank you for your participation.

Sincerely,

TylerGayheart
DoctoralCandidate
Principal Investigator
College of Communication and Information
University of Kentucky
Email: Jtgayh2@uky.edu

Derek Lane, Ph.D.
Principal Investigator
Professor, College of Communication and Information
University of Kentucky
Email: Derek.Lane@uky.edu

Appendix C

Message Overview and Details

Strategy	Description	Argument Ratio	Persuasion Ratio	From	Subject	Word Count	Difference
Message Strategy 1	UK Status Quo Alert Message	Weak: Weak	Low Authority, Low Consensus	University of Kentucky	We are concerned about you!	144	0
Message Strategy 2	UKSQ + High Consensus (Social Proof)	Weak: Strong	Low Authority, High Consensus	University of Kentucky	We are concerned about you!	168	24
Message Strategy 3	UKSQ + High Authority	Strong: Weak	High Authority, Low Consensus	Kirsten Turner, PhD – Associate Provost for Academic and Student Affairs	I'm concerned about you!	166	22
Message Strategy 4	UKSQ + High Authority + High Consensus	Strong: Strong	High Authority, High Consensus	Kirsten Turner, PhD – Associate Provost for Academic and Student Affairs	I'm concerned about you!	189	45

Message Strategy 1: Low Consensus, Low Authority

Message Strategy 1: Low Consensus, Low Authority	Subject: We are concerned about you!
From: <i>University of Kentucky</i>	Word Count: 144
Argument Ratio: Weak: Weak	Persuasion Ratio Strength: Low Consensus, Low Authority

Message: Dear Student,

You have received an academic alert in one of your classes and we wanted to reach out to see if there is anything we can do to help you be successful here at UK. UK students can seek help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources available on campus to help you with skills like time management, studying, and test preparation?

We also have free workshops to help with test anxiety and stress. Your advisor can help get you connected to these resources.

Your Next Steps:

- Click the link here to view the academic alert message
- After viewing the alert, contact your advisor by starting a discussion. Just select “Advisor” and then “Add a New Discussion”. You can ask about tutoring or resources like The Study.

Sincerely,
University of Kentucky

Message Strategy 2: High Consensus, Low Authority

Message Strategy 2: High Consensus, Low Authority	Subject: We are concerned about you!
From: <i>University of Kentucky</i>	Word Count: 168 Diff from SQ: 24
Argument Ratio: Weak, Strong	Persuasion Ratio Strength: High Consensus, Low Authority

Message: Dear Student,

You have received an academic alert in one of your classes and we wanted to reach out to see if there is anything we can do to help you be successful here at UK. Thousands of UK students are seeking help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources on campus to help them with skills like time management, studying, and test preparation? Last fall over 5,000 of your peers took advantage of these resources.

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Your Next Steps:

- Click the link here to view the academic alert message
- After viewing the alert, contact your advisor by starting a discussion. Just select “Advisor” and then “Add a New Discussion”. You can ask about tutoring or resources like The Study.

Sincerely,
University of Kentucky

Message Strategy 3: Low Consensus, High Authority

Message Strategy 3: Low Consensus, High Authority	Subject: We are concerned about you!
From: Kirsten Turner, PhD – Associate Provost for Academic and Student Affairs	Word Count: 166 Diff from SQ: 22
Argument Ratio: Weak: Strong	Persuasion Ratio Strength: Low Consensus, High Authority

Message: Dear Student,

I am the Associate Provost for Academic and Student Affairs at UK. You have received an academic alert in one of your classes and I wanted to reach out to see if there is anything we can do to help you be successful here at UK. UK students can seek help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources available on campus to help you with skills like time management, studying, and test preparation?

We also have free workshops to help with test anxiety and stress. Your advisor can help get you connected to these resources.

Your Next Steps:

- Click the link here to view the academic alert message
- After viewing the alert, contact your advisor by starting a discussion. Just select “Advisor” and then “Add a New Discussion”. You can ask about tutoring or resources like The Study.

Sincerely,
Kirsten Turner, PhD
Associate Provost for Academic and Student Affairs
University of Kentucky

Message Strategy 4: High Authority, High Consensus

Message Strategy 4: High Authority, High Consensus	Subject: We are concerned about you!
From: Kirsten Turner, PhD – Associate Provost for Academic and Student Affairs	Word Count: 189 Diff from SQ: 45
Argument Ratio: Strong: Strong	Persuasion Ratio Strength: High Authority, High Consensus

Message: Dear Student,

I am the Associate Provost for Academic and Student Affairs at UK. You have received an academic alert in one of your classes and I wanted to reach out to see if there is anything we can do to help you be successful here at UK. Thousands of UK students are seeking help at one or several of the 13 learning centers on campus.

Did you know we have many FREE resources on campus to help them with skills like time management, studying, and test preparation? Last fall over 5,000 of your peers took advantage of these resources.

We also have free workshops to help with test anxiety and stress. Thousands of UK students are participating in these workshops each semester. Your advisor can help you get connected to these resources.

Your Next Steps:

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- After viewing the alert, contact your advisor by starting a discussion. Just select “Advisor” and then “Add a New Discussion”. You can ask about tutoring or resources like The Study.

Sincerely,
Kirsten Turner, PhD
Associate Provost for Academic and Student Affairs
University of Kentucky

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Williams, K. C., & Page, R. A. (2011). Marketing to the generations. *Journal of Behavioral Studies in Business, 3*, 1.

VITA

Joseph Tyler Gayheart

Education

University of Kentucky, Lexington, KY - BBA - Marketing - Dec 2009

University of Kentucky, Lexington, KY - MS - Instructional System Design - May 2012

- Graduate Certificate, Online Learning - May 2012
- Graduate Certificate, Technology Leadership - June 2013

Professional

Co-Lead, Health Corps, University of Kentucky - August 2020 - Present

Executive Director, Digital Engagement & Enterprise Salesforce Operations, University of Kentucky, July 1 2020 - Present

Director, Strategic Communication, University of Kentucky, Dec 2018 - July 2020

Director, Office of Strategic Communication, Academic Excellence, University of Kentucky, Dec 2016 - Dec 2018

Director of Communication & Technology, University of Kentucky, July 2012 - Dec 2016

Co-Founder, Gayheart Hill Group, LLC., Cambridge, MA & Lexington, KY, Consulting Firm, June 2014 - June 2018

Director of Interactive Communications, University of Kentucky, Dec 2011 - July 2012

Information Technology Manager III, University of Kentucky, Jan 2010 - Dec 2011

Program Coordinator, Oral History Collection, Louie B. Nunn Center for Oral History, Dec 2009 - Feb 2010

Sargent, Electronic Communications, United States Marine Corps.; Kaneohe Bay, HI - Dec 2002 - Dec 2006

Media

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Top 25 Accounts to follow for Education Technology:
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Signed: Joseph Tyler Gayheart